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MANAGEMENT CONTROL IN INTERFIRM RELATIONSHIPS: THE ROLE OF IMITATION

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By

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“*In the matter of slavish imitation, man is the monkey's superior all the time. The average man is destitute of independence of opinion. He is not interested in contriving an opinion of his own, by study and reflection, but is only anxious to find out what his neighbor's opinion is and slavishly adopt it.*” – Mark Twain

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

GENERAL INTRODUCTION

The overall objective of this PhD dissertation is to investigate the role of imitation in explaining management control in interfirm relationships. In this introduction, we first present the general research motivation, after which we discuss the research methods used. Next, we provide an overview of the three manuscripts that compose this dissertation, and highlight the linkages between them.

1. Research motivation

Over the past several decades, companies have become increasingly engaged in interfirm relationships. Various forms of interfirm relationships provide ways of gaining access to the specialised skills and competencies that are needed to compete effectively in a globalized market place (Groot & Merchant, 2000; Langfield-Smith & Smith, 2003). In this dissertation, the focus is on outsourcing or supply chain relationships, as these in particular have gained much popularity among companies in their attempts to improve competitive advantage (Anderson & Dekker, 2009; Lumineau & Henderson, 2012). Indeed, strong supply chain relationships have considerably increased in importance, and downstream buyers are more and more working towards intensified collaboration with upstream suppliers. This collaboration enables firms to realize benefits such as reducing costs, increasing productivity, accessing valuable resources, and strengthening their market position. Yet, despite this enthusiasm to develop cooperative relationships in buyer-supplier exchanges, many supply chain relationships do not reach this goal (Chua & Mahama, 2007; Lumineau & Henderson, 2012). Although statistics differ and definitions of failure vary, research indicates that over two-thirds of interfirm relationships fail and that a significant contributory factor is the manner in which the risks posed by these relationships are managed and controlled. Thus essentially, interfirm relationships expose firms to significant risks; risks that need to be mitigated in order to effectively reap collaborative benefits and, hence, to decrease failure (Dekker et al., 2013; Langfield-Smith, 2008).

An important way to do so is through the establishment of good management controls. That is, control reduces the perceived probability and impact of undesirable outcomes – which, by definition, is risk (Das & Teng, 2001; Langfield-Smith, 2008). In this regard, the control literature has pointed to the design of proper management control systems (MCS),

which are typically intended to motivate other parties to carry out collaborative plans to ensure that desired goals are met (e.g., Li et al., 2010; Kang et al., 2012). Designing MCS, however, is not the only manner in which firms attempt to achieve control over their cooperative activities. Recent studies find that by reducing concerns about a partner's trustworthiness, the choice of a particular partner to collaborate with can also contribute significantly to mitigating perceived risks (e.g., Dekker et al., 2013; Li et al., 2008). The critical importance of effective control system design and appropriate partner selection for the success of interfirm relationships explains the focus of this dissertation on these two management control aspects.

In particular, while research has devoted considerable attention to the management and control of interfirm relationships, we believe that there is still much scope to better understand specific control system choices and partner selection decisions. For example, there has been only limited attention to *how* managers inform the design of MCS to manage their interfirm relationships, even though this is a key challenge that they face when engaging in such relationships (Dekker & Van den Abbeele, 2010). While MCS are the practices and processes put in place for the ongoing management of the relationship, important decisions also need to be made at the outset of the relationship; that is, when partners are being evaluated and eventually selected. Despite the increasing rapidity with which interfirm relationships are being initiated, however, we also have limited knowledge of *how* managers select their collaboration partners (Bierly & Gallagher, 2007). In fact, the role of trust in partner selection has been identified as an effective control mechanism when relationships are initiated under conditions of uncertainty. The natural inclination to handle conditions of uncertainty by using perceptions of others' trustworthiness may facilitate the decision-making process, but more research is required to explain how trust in potential partners is actually formed, and how this subsequently influences selection decisions. Thus, a better understanding of the design of MCS and the partner selection process is warranted, and brings out the motivation for this dissertation.

The goal of this dissertation is, more specifically, to introduce the role of imitation in explaining management control in interfirm relationships. Substantial literature documents that imitation is a common form of behavior. Indeed, imitation is, amongst many others, a fundamental element of human nature. As pointed out by Hedström (1998), when doubt in what to do, people frequently look around at the actions of others for possible clues. This decision heuristic is practiced in the most varied sets of circumstances, from mundane

everyday activities, to intricate organizational decisions. In an interfirm context, imitation generally refers to the situation in which organizations, or rather key human actors within organizations, are positively influenced by what others organizations do. The importance of such imitation in explaining organizational decisions has been pointed out in various management fields. Studies have examined imitative behavior, for example, relating to issues such as acquisition choices (Haunschild, 1993), application of total quality management principles (Westphal et al., 1997), plant location decisions (Henisz & Delios, 2001), organizational hiring patterns (Williamson & Cable, 2003), export decisions (Brouthers et al., 2005), influence strategies (McFarland et al., 2008), firm exit decisions (Gaba & Terlaak, 2013), and several other organizational processes and management practices. Given the pervasiveness of imitation in organizations, it would be interesting, then, to find out whether this would also affect management control decisions. No research to date, however, has explicitly studied imitation in the context of management control in interfirm relationships.

The lack of attention in previous literature to this role of imitation might be due to the unit of analysis that is often taken. Much research that studies management control in supply chain relationships models these as dyadic relationships between a buyer and supplier only (Chua & Mahama, 2007; Häkansson & Lind, 2007). Such an assumption enables useful theoretical models to be constructed, but it necessarily simplifies the complex reality of practice in which supply chain relationships are often part of larger networks. As a result, scholars have argued that a promising avenue for advancing our understanding of interfirm management control is to explicitly recognize that dyadic relationships sit within a wider network (Caglio & Ditillo, 2008; Anderson & Dekker, 2014). That is to say, for supply chain managers, although a relationship issue might start with a single supplier, this relationship can be more fully addressed only in a broader relationship context that includes relationships with other firms – other suppliers or other buying companies (Choi & Wu, 2009a,b). Specifically, it are these networks of relationships that allow managers to see how others cope with similar situations to their own and thus get some idea as to how to behave themselves, giving rise to the phenomenon of imitation. Hence, by studying firms in their broader relationship context, one can gain insights into how these relationships influence the firms involved and how transfers from firm to firm may take place (Brass et al., 2004; Borgatti & Li, 2009). Following this logic, we expand our view in this dissertation beyond dyadic relationships, in order to study the influence of imitation on management control in interfirm relationships. We argue that imitation is an important factor influencing whether

and how interfirm cooperation will be formed and how it will be managed (Lyles et al., 1996). This line of argument builds on theories and models of imitation that address relevant aspects influencing important choices in cooperative strategies (Smith et al., 1995).

In the first two manuscripts, we consider vertical buyer-supplier-supplier triads as a specific type of network and investigate upstream MCS imitation in the supply chain. More specifically, MCS imitation is present when the use of MCS by the buyer with the first-tier supplier increases the likelihood of similar MCS being used by the first-tier supplier with the second-tier supplier (cf. Haunschild & Miner, 1997; McFarland et al., 2008). That is, suppliers are exposed to the MCS used by the buyer when dealing with them, and these may then serve as models for the MCS used with their own suppliers. In the first manuscript, we examine the occurrence of such MCS imitation, while the second manuscript is designed in order to understand its implications for performance.

In the third manuscript, we incorporate horizontal relationships between multiple buyer firms, and study the role of imitation in trust formation and partner selection. In this setting, imitation is defined to take place when knowing other buyer firms that trusted a potential supplier, i.e., have done business with them, increases a focal buyer manager's level of trust in the supplier, and subsequently its intention to do business with the same supplier (cf. Wittek, 2001; Barrera & Buskens, 2007). Our general contention here is that buyer managers trust potential partners who are trusted by others in their own network position. In other words, in the third manuscript, we investigate how perceptions of a potential partner's trustworthiness are shaped by the actions of others, and how these perceptions, in turn, affect decisions regarding own partner selection.

Taken together, while imitation may take many forms, we view imitation in essence as a mechanism where managers observe actions by other firms and change their own beliefs and/or behavior as a result (Bingham & Davis, 2012). Throughout this dissertation, we assume that imitation occurs intentionally, in that imitators have good reasons for imitating others, or at least have good reasons for believing this to be the case. For instance, to the extent that the other firms act reasonably and avoid alternatives that have proven to be inferior, imitation can be perceived to be a useful strategy for arriving at better decisions. By extending previous work on such imitation, which has long been contended to be prevalent in daily managerial behavior (Manz & Sims, 1981), in the context of management control, we aim to develop a better understanding of *how* MCS are designed and *how* collaboration partners are selected in interfirm relationships, and supply chains in particular.

2. Research methods

In order to realize the research objectives postulated above, multiple research methods were used in this dissertation, keeping in mind that "the impact of management studies depends upon the appropriateness and rigor of the research method chosen" (Scandura & Williams, 2000, p. 1248). In all three manuscripts presented in this dissertation, we use quantitative research methods, as the main intent is theory testing. More specifically, we employ both survey and experimental methods, which have been widely used in management accounting research. The suitability of each method should be judged in light of the specific objectives of the study.

In the first two manuscripts, we employ a survey research method. The reason for this is that surveys are generally used to explain and understand phenomena in a natural setting. Given that imitation frequently occurs in reality, empirical studies to test models on the antecedents and consequences of imitation are indispensable in order to provide a better understanding of this phenomenon (Ordanini et al., 2008). Accordingly, the primary purpose of the first manuscript is to identify and confirm the existence of MCS imitation in a supply chain setting, whereas the second manuscript aims to investigate the performance implications of such imitation. Conducting a survey allows us to test this with real company data, and thus to gain insights on the occurrence and consequences of imitative behavior in practice. While the survey method clearly has its benefits in this regard, it is important to note that it also has been the subject of heavy criticism, with the central concern being the reliability of the data obtained. Nonetheless, if surveys are constructed and administered appropriately, then they can be a source of large-scale, high-quality data (Van der Stede et al., 2007). Therefore, we paid careful attention to applying sound methodological procedures, as to provide valid and interpretable data to address our research questions in the first and second manuscript.

In the third manuscript, we opt for an experimental research method. Experimentation involves the active and purposeful manipulation and measurement of variables, thereby enabling the researcher to create a research setting and generate data. By manipulating the independent variables and using the principle of randomization, experiments also enable the investigator to control the research setting and isolate the effects of variables that are confounded in the natural environment (Sprinkle & Williamson, 2007). This method is considered to be particularly useful for the third manuscript, as the impact of various factors influencing partner attractiveness cannot be gauged for relationships that are already in

existence. For instance, surveying managers regarding the choices already made is likely to result in retrospective biases (Shah & Swaminathan, 2008). An experimental approach can help to overcome these issues and also allows us to isolate the causal effect of information from other firms' experiences from other factors influencing perceptions about a potential partner's trustworthiness and subsequent selection decisions, and hence is most suitable to answer the research questions in the third manuscript.

3. Overview of the three manuscripts

This dissertation consists of three manuscripts in which we study the role of imitation in explaining management control in interfirm relationships. Although the three manuscripts that compose this dissertation serve a singular overarching purpose, each manuscript investigates a different research question and is written to read independently of the others. As all manuscripts are interlinked, however, there might be some overlap in the discussed literature. In this section, we provide a brief overview of the three manuscripts, and highlight the connection between them. Figure 0.1 schematically represents the three manuscripts.

Manuscript I

The first manuscript is motivated by the scarce attention that has been paid to where managers get the inspiration for the use of specific MCS in supply chain relationships. As indicated earlier, despite a growing understanding of the ways in which such relationships may be managed using MCS in particular, little is known about how managers inform the design of MCS (Dekker & Van den Abbeele, 2010). In particular, we propose that managers can get some inspiration about how to control their interfirm transactions, by looking at how other firms controlled them.

The major question underlying this study is whether the use of MCS by buyers with their suppliers results in imitative MCS usage by these suppliers with their own suppliers. Previous research demonstrates that imitation is present in the supply chain, and that network partners often replicate the ways in which relationships are managed (e.g., Fu, 2012; McFarland et al., 2008). In this study, we particularly consider MCS used for the day-to-day management of the relationship and, in accordance with the interfirm control literature, include the specification and monitoring of outcomes and behaviors, as well as socialization activities such as frequent meetings and communications (e.g., Dekker, 2004; Langfield-Smith, 2008). In this context, imitation takes place when the MCS used by the supplier can be, partially,

explained as mirroring the MCS used by the buyer towards them. The purpose of this study, then, is to examine the conditions under which such MCS imitation is likely to occur.

Our theoretical framework, which predicts the antecedents of MCS imitation, has an institutional theoretical foundation (Lieberman & Asaba, 2006; Sahlin & Wedlin, 2008). We specifically propose that under conditions of environmental uncertainty and affective commitment, MCS imitation is more likely to happen. In order to test these conditions of MCS imitation, a survey was conducted using a unique sample of vertically linked supply chain triads.

The results are consistent with MCS choices being shaped by imitation and also provide solid support for our theoretical framework predicting the conditions that make MCS imitation more likely. More specifically, we demonstrate that a large variance in the use of upstream MCS in the supply chain can be explained in terms of imitation. In addition, we provide empirical evidence for the drivers of such MCS imitation. Specific factors that impact the level of imitation are, as expected, environmental uncertainty and affective commitment. Altogether, this study contributes to our understanding of how MCS are developed in interfirm relationships, and particularly sheds light on the occurrence of MCS imitation in supply chains.

Manuscript II

The second manuscript is strongly related to the previous one and comprises a further investigation of the MCS imitation phenomenon. In particular, with the results of the first study indicating that MCS imitation exists in practice, the question arises whether such imitative behavior is a reasonable strategy. Previous research suggests that imitation can have diverse possible consequences. There is, however, little evidence on the actual link between imitation and performance (Lieberman & Asaba, 2006; Ordanini et al., 2008). The purpose of this study is to clarify the performance implications of MCS imitation in the supply chain.

While in the organizational learning literature it is commonly assumed that imitating successful ideas or practices from other firms is beneficial, we argue that the extent to which firms benefit from imitation is contingent upon the conditions in which they operate (Csaszar & Siggelkow, 2010; Kim & Miner, 2007). More specifically, we investigate the effectiveness of MCS imitation, by considering context similarity of the relationships in which the MCS are being spread from one to another.

The role of context similarity is particularly relevant for the study of management control issues, since the use and effectiveness of MCS is affected by critical characteristics of the transaction context. Earlier studies on MCS design in interfirm settings have argued that performance results from alignment between transaction context and control structure (e.g., Anderson & Dekker, 2005). Taking this a step further, we posit that the performance consequences of MCS imitation are dependent on the alignment between the imitated MCS and the specific transaction context in which they are to be installed. Similar as in the first study, we focus on the MCS used for the day-to-day management of the relationship, and follow previous interfirm control literature in conceptualizing this as a combination of outcome, behavior, and social controls (e.g., Dekker, 2004; Langfield-Smith, 2008). Regarding the transaction context, several contextual factors are taken into account, such as the level of uncertainty surrounding the transaction, the degree of interdependence between the transaction partners, and the duration of the exchange relationship. We test our model using survey data collected from firms involved in a supply chain triad.

As predicted, we find that MCS imitation can positively impact performance, but that this impact hinges upon the level of similarity in the transaction context. The results show a positive relationship between MCS imitation and performance in situations of high transaction context similarity, whereas the performance benefits substantially weaken when MCS are imitated across relationships with dissimilar transaction contexts. Overall, this study further contributes to our understanding of how MCS are developed in interfirm relationships, and provides interesting insights on the processes involved in successful MCS imitation in supply chains.

Manuscript III

The third manuscript takes a different perspective and is concentrated on investigating the role of imitation in trust formation and partner selection. After all, understanding why certain partners are considered to be more attractive and likely to be selected, remains an important research issue (Shah & Swaminathan, 2008). Therefore, instead of examining the use of specific systems to manage and control interfirm relationships, we now turn to the partner selection process, and introduce the role of imitation in forming trust judgments and making selection decisions when entering into new collaborative relationships.

In this study, the focus is on a buyer manager's trust in a potential supplier firm during the initial stages of the relationship, when partners are being evaluated and eventually

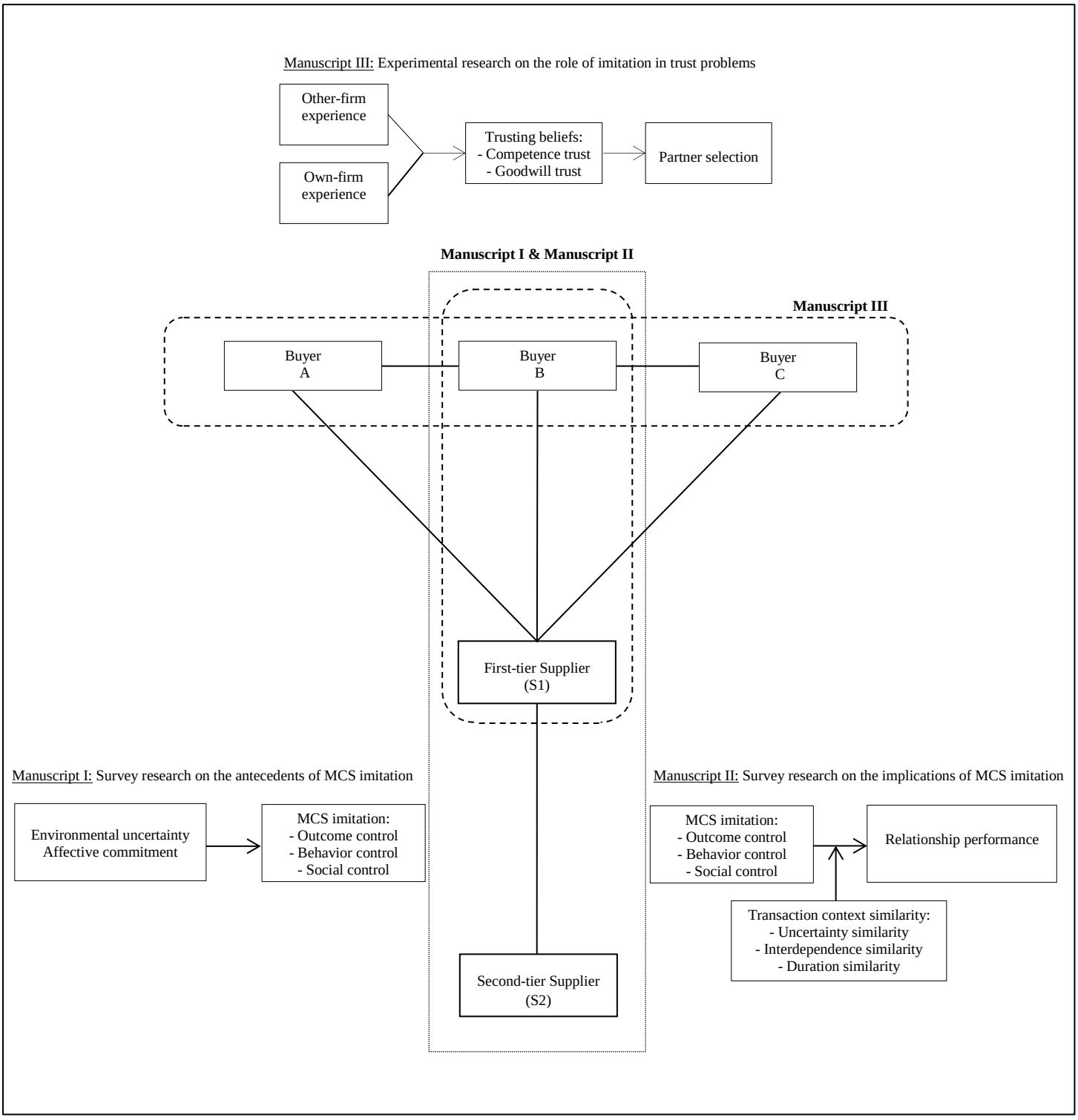
selected. The starting point is that managers initially need cues to assure them that the potential partner is trustworthy, upon which then the decision regarding partner selection will be based. The purpose of this study is to explain where these cues may come from. In particular, the decision-making process associated with selecting a collaboration partner is complex and challenging, especially when there is incomplete information and time pressures intensify (Bierly & Gallagher, 2007; Huang et al., 2008). Other firms' dealings with potential partners may then serve as a valuable piece of information in a manager's attempt to come to an assessment of the partners' trustworthiness, and consequently, to help them decide which partner to select.

Although scholars have speculated about how third-parties may serve as trust intermediaries, surprisingly little research has directly assessed how trust might be transferred in an interfirm setting (Barrera & Buskens, 2007). The central tenet in this study is that interfirm partnering may be affected by a process of imitation, by which managers adapt their trusting beliefs and subsequent decisions based on what others have done or are doing.

Our hypotheses are tested by conducting a between-subjects experiment, in which participants assume the role of a buyer manager in charge of handling collaborative relationships with supplier firms. Specifically, by varying the information that can be obtained from others, we are able to provide insights into how imitation works in the context of trust problems. Prior research has established that trust has two components, being competence trust on the hand, and goodwill trust on the other hand (e.g., Dekker, 2004; Langfield-Smith, 2008). Since competence trust and goodwill trust present a clear distinction, we adopt these dimensions of trust in this study.

The findings support the argument that buyer managers inform their trust judgments by looking at other firms that have engaged in similar collaborations. The results reveal different effects on the two trust dimensions, as simply knowing other firms that trusted the supplier, without any information about the outcomes, is sufficient for the buyer manager's level of competence trust, but not of goodwill trust, in the supplier to increase. The results also indicate that higher levels of both competence and goodwill trust, in turn, increase the likelihood of the supplier being selected. Taken together, our findings provide evidence on imitation effects, and suggest that managers may sometimes come to trust and select a certain partner, just because they see others do. In this way, our study highlights unique aspects of how trust forms at the earliest stage of an interfirm relationship, and additionally how this influences managers deciding with whom to collaborate.

Figure 0.1: Overview manuscripts



MANUSCRIPT I
MANAGEMENT CONTROL SYSTEM IMITATION: DRIVING FACTORS

Abstract

This study investigates the use of MCS in supply chains. We examine whether the use of MCS by buyers with first-tier suppliers results in imitative MCS usage by these first-tier suppliers with second-tier suppliers. We propose that under conditions of environmental uncertainty and affective commitment, MCS imitation is more likely to occur. In order to test this, a survey was conducted using a unique sample of vertically linked supply chain triads. We show that suppliers often imitate MCS used by the buyer. We also find that environmental uncertainty and affective commitment impact the level of imitation. The effects, however, are not similar for all types of control. Distinguishing between imitation of outcome, behavior, and social controls, results reveal different effects for each type of control. Altogether, by expanding our view beyond dyadic interactions, this study contributes to the understanding of how MCS become imitated in supply chains.

1. Introduction

This study seeks to improve our understanding of how MCS are developed in supply chains. Several studies have investigated the use of MCS in an interfirm setting (Caglio & Ditillo, 2008; Anderson & Dekker, 2014). Despite a growing understanding of the ways in which such interfirm relationships may be managed using MCS in particular, there has been relatively little analysis on where managers get the inspiration for the use of specific MCS in these relationships. In this study, we specifically investigate the role of *imitation* involved in the establishment of MCS in supply chains. The key question motivating this study is whether the use of MCS by buyers with their suppliers results in imitative MCS usage by these suppliers with their own suppliers.

To date, much research that studies the use of MCS in supply chain relationships models these as dyadic relationships between a buyer and supplier only. The importance of studying not only dyads but also interactions between vertically connected dyads, however, has long been acknowledged (Wuyts et al., 2004). Following this reasoning, we consider a vertical supply chain involving dyadic relationships at two levels. The first-level dyad involves the relationship between the buyer and the first-tier suppliers (S1s), and the second-level dyad involves the relationship between these S1s and the second-tier suppliers (S2s). When the first-level dyad and second-level dyad are considered in isolation, they paint one picture of two companies dealing with each other. However, when we bring them together into a triad, this enables us to see different relational dynamics. As is typically the case in outsourcing relationships, the S1s then act as a bridge between the buyer and the S2. In this way, firms are widely connected with each other, potentially serving as conduits for spreading MCS from firm to firm. That is, S1s are exposed to the MCS used by the buyer when dealing with them, and these may then serve as models for the MCS used with the S2s. From this point of view, it is interesting to investigate to what extent the MCS that the buyer uses to organize the relationships with its S1s are in effect imitated by these S1s to use with the S2s.

The purpose of this study is to examine the conditions under which MCS imitation in supply chains is likely to occur. Our test design emphasizes the role of imitation as an intended decision on behalf of the S1 in response to observing the MCS used by the buyer. As such, this study essentially looks at the factors influencing the S1's decision to imitate the buyer firm's MCS in the supply chain. The imitation of management practices in supply chains has, in particular, been shown to operate through activation of network ties when a focal firm is facing a highly complex environment and is uncertain about the best response

(McFarland et al., 2008). In addition, firms' positive affect toward and identification with another may increase their willingness to emulate, resulting in greater imitative behavior. Drawing on this stream of work, we expect that next to environmental uncertainty, also affective commitment is positively related to the occurrence of MCS imitation in supply chains.

In order to test the model, a survey was conducted. Based on a unique data set consisting of vertically linked buyer-supplier-supplier triads, we demonstrate that MCS imitation is common in the supply chain, and that it is important to consider several factors in explaining this phenomenon.

For corroboration purposes, we used multiple measures to test for MCS imitation. The first measure directly asked S1s to indicate the extent to which they considered the MCS they are using towards the S2s as being imitated from the buyer firm. The second measure had S1s report on the MCS that the buyer used towards them and, in turn, S2s report on the MCS that the S1 used towards them, so that we also indirectly, with non-self-reported measures, investigate similarities in MCS. For the two test specifications, the conclusions are the same. Overall, we find that the use of upstream MCS can be partly explained in terms of imitation. As expected, specific factors that impact the level of imitation are environmental uncertainty and affective commitment. Our findings indicate, however, that the imitation effects are not similar for all types of control. Besides examining MCS imitation as a whole, we distinguished between imitation of outcome, behavior and social controls. It appears that all three types of control are being imitated, but the conditions under which they operate seem to determine which type of control the supplier will choose to imitate from the buyer.

In testing for imitation, it is also crucial to control carefully for alternative explanations for commonalities in MCS usage. One could argue, for example, that a powerful buyer may coercively push specific practices to be adopted in the supply chain. However, our data provides evidence that S1s have a considerable degree of freedom when selecting their MCS, augmenting the potential of true imitative behavior. Furthermore, we control for situations where compliance would be more plausible, such as when the S1 is highly dependent on the buyer. In addition, it is important to control for the emergence of similar MCS due to a common source. For instance, firms sharing a cultural background or facing similar conditions may have preferences for similar MCS. Notably, we find imitation effects above and beyond the influence of such common factors, increasing our confidence in the inferences drawn.

We contribute to the accounting literature by providing evidence on the role of imitation in the use of MCS in supply chains. As such, we expand our view beyond dyadic relationships, which is important for a more complete understanding of MCS usage. We further contend that organizations that are aware of MCS imitation in different parts of the supply chain should be better able to control their upstream interactions.

The remainder of the paper is organized as follows. In the next section, relevant literature is reviewed. Then, our theoretical framework is outlined, and hypotheses are developed. This is followed by the empirical part of the study, including a description of the sample and data collection, measurement validation, and analysis and results. To conclude, we discuss the academic as well as the managerial relevance of the study, and point to some limitations and directions for further research.

2. Literature review

Traditionally, much research that studies the use of accounting and control systems in supply chains is guided by a transaction cost economics framework, and is particularly concentrated on how these systems are matched with the transaction context (Williamson, 1985). In this regard, several studies have indicated the importance for firms to adapt their MCS to transaction, transaction environment and transaction party characteristics (e.g., Anderson & Dekker, 2005; Langfield-Smith & Smith, 2003; Phua et al., 2011; Van der Meer-Kooistra & Vosselman, 2000). The general reasoning is that these factors are related to potential control problems that may arise when engaging in a transaction (Dekker, 2004). MCS should then be accordingly installed to mitigate and manage these problems.

Although these studies certainly contribute to our understanding of how transactions may be optimally managed, they have paid little attention to where the inspiration for the use of specific MCS is coming from. Specifically, these studies rather offer an explanation of the *extent* to which exchange partners will use MCS as a function of the specific transaction context. However, they provide limited insights into the *diffusion* of MCS across the supply chain.

In fact, the focus in prior studies has predominantly been on individual transactions, and supply chain relationships are frequently modeled as dyadic relationships between a single buyer and supplier. Such an assumption enables useful theoretical models to be constructed, but it necessarily simplifies the complex reality of practice in which supply chain relationships are often part of larger networks. Related to this, scholars have highlighted the

importance of considering the network of relationships within which firms are embedded (Granovetter, 1985; Gulati et al., 2000). The buyer-supplier relationship, for instance, could be complicated by relationships that the buyer and/or supplier may have with significant others (Choi & Wu, 2009a). Interestingly, firms in such a network of relationships provide examples of behavior that is often imitated by other network members (Haunschild, 1994; Brass et al., 2004). Through these networks, firms are able to observe and experience possible options and strategies that they then might adopt themselves. This provides mechanisms that facilitate firms doing the same thing as their network partners are doing. Hence, by studying firms in their broader network of relationships, one can gain insights into how these relationships influence the firms involved and how transfers from firm to firm may take place (Borgatti & Li, 2009).[1]

The importance of imitation in explaining firm behavior has been pointed out in various management fields. This has led many to investigate the mimetic adoption of practices in several network contexts, such as supply chains (e.g., Huo et al., 2013; Liu et al., 2010; McFarland et al., 2008), and the work has expanded from investigating the diffusion of technologies and innovations to examining the diffusion of competitive strategies, organizational structures, and management practices (e.g., Chiu et al., 2013; Li et al., 2015; Shipilov et al., 2010). The current study adds to this by investigating imitative behavior related to MCS issues in a supply chain setting.

More specifically, we consider buyer-supplier-supplier triads, with each member being interconnected by a vertical relationship, as a specific type of network.[2] In this setting, the buyer outsources to the S1 and, in turn, the S1 outsources to the S2. This network design is of particular interest as it enables us to study how the dyadic relationship between the buyer and S1 influences the dyadic relationship between the S1 and S2. In particular, taking this perspective, the S1 sits between the buyer and the S2, and may be inclined to control its supplier relationships in a similar way as the buyer firm controlled them.

[1] There are some previous studies that have taken a network perspective to examine the ways in which supply chain relationships are constructed and controlled (e.g., Chua & Mahama, 2007; Häkansson & Lind, 2004; Mouritsen & Thrane, 2006; Thrane & Hald, 2006), but these studies have mainly relied on actor-network theory and did not consider the role of imitation in the development of MCS within such relationships.

[2] Such a triad can be seen as the smallest unit of a network. That is to say, a network generally consists of nodes and the links that connects these nodes. In order to capture the essence of a network, one must at minimum be able to address how a link affects another link (Choi & Wu, 2009). The smallest unit of network arrangement where this occurs is a triad. In a supply chain context, the buyer and suppliers form the nodes, with the relationships between them constituting the links. The question of interest, in our triadic configuration, is then how the buyer-supplier relationship affects the supplier-supplier relationship.

We refer to control as any attempt to motivate and enable transaction partners to work in such a way that desired objectives are achieved (Speklé, 2001; Kirsch et al., 2002). Control is seen here in the sense that there is a "controller" (the company exercising control; e.g., the buyer) and a "controllee" (the target of control; e.g., the supplier). In other words, the buyer's control is defined as the process through which the buyer influences the supplier's actions (Donada & Nogatchewsky, 2006; Stouthuysen et al., 2012). Hence, consistent with prior supply chain and outsourcing research, we view the buyer as the one who typically initiates the transaction and decides on the mechanisms used to manage the transaction (Dekker et al., 2013). Taking this a step further, as the MCS used by the buyer are readily identifiable by the supplier, imitation effects are likely to take place (Greve, 1998). In particular, suppliers are exposed to MCS of the buyer when dealing with them. For these suppliers, MCS used by the buyer may then serve as models, examples to imitate or emulate, in their interactions with their own suppliers (Haunschild, 1993). Specifically in our context, the buyer may use various types of control towards the S1 as part of their day-to-day management. When the S1 engages in outsourcing itself, it is reasonable to expect that they will replicate these controls towards the S2s. Therefore, we examine the impact of the buyer's use of MCS towards the S1 on the S1's use of MCS towards the S2, in this direction.

Building on this line of thought, imitation represents an intended decision. A firm or its decision-maker receives a stimulus from other firms' behavior, and then decides whether to imitate or not (Lieberman & Asaba, 2006; Ordanini et al., 2008). It is through such imitation that the MCS used by network partners in their respective relationships may come to resemble each other. It must be noted, however, that the decision to adopt certain practices is often also made in relation to the pressures exerted by dominant other organizations.[3] In a supply chain context, coercive pressures come into play when a powerful buyer requires its suppliers to adopt favorable structures or practices. For example, buyers may insist on the use of certain supply chain principles (e.g., Ke et al., 2009; Zsidisin et al., 2005; Wu et al., 2012) or quality management applications (e.g., Braunscheidel et al., 2011; Ketokivi & Schroeder, 2004; Nair & Prajogo, 2009) as a condition for doing business. Under these circumstances, suppliers have the option of either conceding to buyer demands or foregoing that business relationship. In this way, firms are induced to select those practices adopted by others upon

[3] This is helpful in distinguishing imitation from other mechanisms that may be at work that encourage the convergence of business practices. The one we focus on is mimetic adoption, where firms choose to engage in mimicry of other firms. It is important, however, to contrast this with compliant adoption, by which firms are required to comply with demands from outside the firm (Mizruchi & Fein, 1999). The latter may be a form of isomorphism, but not of imitation, because firms do not intentionally try to copy the behaviors of others.

which they are dependent, leading them to become more similar. Yet, while this coercion argument may be applicable to practices to be directly implemented by the supplier, the focus in this study is on MCS used for the ongoing management of transactional relationships. This involves a broad range of mechanisms that can be used for planning, coordinating, and evaluating supply chain partners, for which we believe it is less likely that these will be strictly imposed by the buyer. In general, this implies that firms will have the latitude in picking and choosing which controls to rely upon. Thus, consistent with earlier work, we acknowledge the existence of managerial choice in the use of MCS (Brignall & Modell, 2000). That is, the buyer's MCS may be consulted to inform, but not dictate, the use of MCS further in the supply chain. In their transactional relationships, firms may decide to follow or to model themselves after other players, so that similarity among firms may be observed (Kostova et al., 2008). However, this is the result of choices firms make, rather than compliance with downstream actors in the supply chain. Given this perspective, the adoption of MCS is conceived to represent an organization's choice and, in our context, to reflect voluntary mimicking behavior (Guerreiro et al., 2012).[4]

The purpose of this study, then, is to investigate the existence of such MCS imitation in supply chains, and develop and test a theoretical framework that predicts the conditions under which MCS imitation is likely to occur.

3. Theory and hypotheses

Our theoretical framework, which predicts the antecedents of MCS imitation, has an institutional theoretical foundation. Institutional theory has been widely used in studying imitative behavior. It traditionally emphasizes social influences on organizational behavior, and suggests that organizations copy practices adopted by others in an effort to acquire legitimacy (DiMaggio & Powell, 1983). More recent developments in institutional theory, however, posit that mimickers may be economically motivated and that imitation occurs in an attempt to improve efficiency. According to this perspective, organizations respond to indications that specific actions are worthwhile to pursue (Haunschild & Miner, 1997).

[4] Our data provides some evidence for this reasoning, given the variety in S1s' MCS usage. That is to say, not all S1s are equally adopting the buyer's MCS towards the S2s. There are cases where the buyer is using similar MCS towards several S1s, but where only some of these S1s adopt the MCS in the relationships with their S2s. This signifies that imitation effects are at work, where the S1s are making a choice whether or not to imitate the buyer's MCS to use with their S2s. As such our results are unlikely to be strongly driven by compliance, as in these situations the S1s would have no other choice but to adopt the MCS imposed by the buyer in their relationships with the S2s.

Although these variants may differ concerning the underlying motives that trigger imitation, they generally propose that organizations will be more likely to take a particular action if other organizations have taken a similar action.[5]

Besides this general notion of imitation, the literature also emphasizes conditions under which such imitative behavior occurs. In particular, drawing on institutional theory and previous work, we identify two important drivers influencing the occurrence of imitation. The first driver relates to *information-based* imitation, whereby organizations model themselves on other organizations when the environment is uncertain. Researchers have long noted the tendency of organizations to avoid and reduce uncertainty. One prominent mechanism for addressing uncertainty is imitative behavior (Henisz & Delios, 2001). With regard to supply chains, uncertainty is a key element of the environmental context. In particular, environmental uncertainty refers to the degree to which firms' external environment in terms of its competitors' actions, technology, and consumer tastes and preferences, is characterized by an absence of pattern, unpredictability, and unexpected change (Fynes et al., 2004). These unpredictabilities and sudden changes in the external environment result in high information processing demand for firms. In such situations, firms are particularly likely to be receptive to information implicit in the actions of others (Lieberman & Asaba, 2006). Specifically in complex and uncertain environments, where a firm's best course of action is unclear and they are not sure what to do, firms frequently look at others and replicate what they did in the same situation. The second driver refers to *identification-based* imitation, where organizations copy other organizations that they relate to and with whom they identify. While many scholars associate the mechanisms of imitation to uncertainty, others propose identification to be the main explanatory concept (Sahlin & Wedlin, 2008). The identity of an organization is derived from its reference to and relationship with others. Therefore, the relational context that connects two firms, is also important to consider in order to understand and explain imitative behavior (Kostova & Roth, 2002). In supply chain relationships, this relational context can be described by the level of affective commitment. Affective commitment typically has been defined as a party's intention to continue an exchange relationship based on a generalized sense of positive regard for and attachment to the other

[5] In this respect, we recognize that imitation can be driven by both social and economic considerations. That is, mimickers may have legitimacy motivations as well as efficiency ones. Moreover, we also believe that all forms of imitation have some rational basis, since mimickers always seek benefits, be it social or economic. The difference mainly lies in the means through which these benefits are sought (Ketokivi & Schroeder, 2004). The social view relates to building normative rationality, referring to choices induced by historical precedent and social justification. The economic view focuses on economic rationality, which is mainly motivated by efficiency and profitability.

party (Geyskens et al., 1996). If a relationship is characterized by high affective commitment, and firms experience states of attachment and identification towards another, they are increasingly likely to display matching behaviors. Taken together, both environmental and relational factors suggest testable hypotheses relevant to predicting the occurrence of imitation. In particular, by looking at the effects of environmental uncertainty and affective commitment, we investigate the conditions that would lead to greater imitative behavior.[6]

The focus in this study is specifically on the imitation of MCS used in interfirm transactional relationships. The control literature suggests that MCS typically consist of two types of control, namely formal and informal control (Das & Teng, 2001; Kang et al., 2012). Formal control can be subdivided into outcome and behavior controls. Outcome controls focus on the measuring and monitoring of results to be achieved, regardless of the processes followed to obtain these results. Behavior controls, in contrast, are to ensure that the processes are appropriate, rather than focusing on the results itself. In the case of informal or social control, organizations do not specify outcome targets or desirable behaviors, but rely on the development of shared values and beliefs and on the internalization of goals. Social controls mainly involve socialization activities such as frequent meetings and communications. However, while this typology has been widely accepted in the literature, it must be noted that the types of control are not completely distinct, and there is some agreement that all control systems consist of formal as well as informal controls (Langfield-Smith & Smith, 2003). The fact is that these controls, jointly, motivate transaction partners to work in such a way that desired objectives are achieved (Dekker & Van den Abbeele, 2010). This corresponds to the idea of MCS comprising a combination or set of controls (Chen et al., 2009; Harmancioglu, 2009) In this study we investigate the imitative use of such a combination of controls. In other words, we refer to imitation as more extensive overlap in the buyer's and S1's reliance on MCS and, in line with prior literature, we conceptualize MCS as combinations of outcome, behavior and social control mechanisms.

Based on the prior discussion, we expect that both environmental and relational factors will be important determinants of the occurrence of MCS imitation. We make no predictions about whether the types of control are impacted differently by various imitation conditions

[6] In this way, we take a multilevel perspective in explaining imitative behavior within the supply chain, in accordance with previous research. McFarland et al. (2008), in particular, pointed to the importance of considering both macro and micro perspectives, and suggested that the source of imitation in supply chains can be a firm's external environmental context, but also a firm's specific relational context with another. Therefore, we take into account both macro-level factors (i.e., environmental uncertainty) and micro-level factors (i.e., affective commitment), and investigate their joint impact on imitation.

and leave the matter for empirical investigation. Although we think it is possible that different sources of imitation in supply chains are associated with different types of control, the literature provides little guidance for hypothesizing how specific sources of imitation (e.g., environmental uncertainty or affective commitment) relate to imitation of specific types of control (e.g., outcome, behavior, social). What we test is the more general proposition that controls are more extensively imitated in supply chains when imitation conditions are present. Below, we develop specific hypotheses that predict the conditions under which MCS imitation is likely to occur.

3.1 Environmental uncertainty and management control system imitation

When firms establish interfirm relationships under conditions of uncertainty, accounting literature suggests that they will make use of MCS to monitor transaction partners and align their joint processes (Dekker, 2004). At the same time, however, these conditions of uncertainty make it difficult for managers to establish effective MCS. Managers often do not have information on changes in the environment, how these changes will affect their organization, or if their response to these changes will have the intended consequence (Galaskiewicz & Wasserman, 1989). In such situations of environmental uncertainty, managers may not always have the capacities to make appropriate decisions regarding MCS design. Specifically, environmental uncertainty makes it difficult for managers to select appropriate actions, because they are unsure about the likelihood of possible outcomes (Lieberman & Asaba, 2006). Managers who perceive a higher level of environmental uncertainty therefore may be motivated to look at other firms to get some assurance about how to act themselves (Henisz & Delios, 2001). In particular, imitating the practices of other supply chain members may provide a viable solution to the perceived uncertainty (McFarland et al., 2008). In our setting, this means that the supplier would follow the buyer's use of MCS in the interactions with its own suppliers. Therefore, when environmental uncertainty is present, we expect that S1s will be more likely to imitate the buyer's use of MCS to use with the S2s.

> **H1:** When the environment of a first-tier supplier is characterized by high uncertainty, we expect higher levels of imitation of the buyer's use of MCS by the first-tier supplier to use with the second-tier supplier.

3.2 Affective commitment and management control system imitation

Affective commitment has been frequently used in previous studies to characterize exchange relationships (Stanko et al., 2007). It is also considered to be relevant from an imitation perspective as, consistent with earlier propositions that firms imitate those in their network whom they know and trust, we believe that affective factors are important in explaining imitative behavior (Galaskiewicz & Wasserman, 1989). In particular, affective commitment may promote imitation, since organizations tend to imitate those they relate to and those with whom they identify (Sahlin & Wedlin, 2008). Specifically, the feelings of attachment and identification that affective commitment entails are often linked with a desire to be closely associated with the partner, and may lead to a greater willingness to resemble. Moreover, firms are also more attentive to the actions of closely related others, as these are generally considered as more reliable. Confirming these arguments, the degree to which firms experience a state of attachment and identify with another has been found to be positively related with practice adoption (Kostova & Roth, 2002). Also in a supply chain context, the importance of such relational elements has been acknowledged, and has been suggested to play a significant role in the mimetic adoption of management practices (McFarland et al., 2008). Following this reasoning, when the supplier feels committed to the buyer, they would be more inclined to adopt its MCS. That is, given the increased salience and perceived value of the MCS used by the buyer, the supplier would be more likely to rely on these MCS to manage the relationships with its own suppliers. Thus, in situations of high affective commitment, we expect greater imitative use of the buyer's MCS by S1s to use with the S2s.

> **H2:** When the relationship between a buyer and a first-tier supplier is characterized by high affective commitment, we expect higher levels of imitation of the buyer's use of MCS by the first-tier supplier to use with the second-tier supplier.

4. Sample design and data collection

We collected survey data from partner firms working together in close buyer-supplier relationships. In particular, the unit of analysis in this study is the vertical supply chain consisting of three members – that is, buyer-supplier-supplier triads.

We gained the cooperation of a large Fortune 500 consumer goods manufacturer that has outsourced different production and service functions. In this setting, it is also common for

S1s, in turn, to outsource to one or more S2s. This provides a good context for investigating the occurrence of imitative behavior.[7]

Data were collected from both the S1s and S2s. First, contact information for the S1s was obtained from the buyer. In particular, 1000 S1s were randomly selected from the buyer's supplier database. Second, contact information for the S2s was obtained from the S1. Each S1 principal surveyed was asked to select at least three S2s with whom they had recently done business. These S2s were explicitly asked to respond to all questions with the S1 who had identified them in mind. This procedure ensured that we obtained matched triads.

The S1s and S2s were both sent emails with a survey questionnaire. Two separate questionnaires were developed. For those who did not respond, the survey questionnaire was sent again approximately one month after the initial mailing. After two such waves of mailing, we received 61 S1 responses and 96 S2 responses. We evaluated informant quality using a series of questions that assessed the informant's ability to respond to the questionnaire items, the level of involvement with the partner firm, and the knowledge of their firm's dealings with the partner firm. We excluded 2 S2 respondents with a low score on all three informant quality questions. Further, 1 S2 response was eliminated because of missing data. This left us with 61 usable S1 responses and 93 usable S2 responses. These S2 responses named 60 of the contacted S1s. Multiple responses were received for 13 single S1s. In this case, where two or more S2s identified the same S1, we treated these as one-to-one unique relationships. Matching of the buyer, S1 responses, and S2 responses then resulted in 91 unique triads.[8,9] An overview of the key sample characteristics (i.e., firm age, firm size, location, industry) is provided in Appendix 1.A.

To test for non-response bias, we compared early and late respondents for each sample (i.e., S1 and S2) on the study variables and some company demographics (Armstrong &

[7] Especially since the buyer is regarded as an organization of high prestige, it is likely to serve as a role model for other companies upstream in the supply chain. There is some evidence that the actions of organizations with high prestige particularly influence the actions of others (e.g., Burns & Wholey, 1993; Haunschild & Miner, 1997). That is, organizations attend mostly to the actions of large and profitable organizations, and are often seen as role models to be imitated.

[8] Out of the 61 usable S1 responses, 1 S1 could not be matched to a S2. Out of the 93 usable S2 responses, 2 S2s could not be matched to a S1. As such, we obtained complete triadic data for 91 triads in total.

[9] This research design creates a potential problem of non-independence among the observations because some S1s enter the analysis multiple times. To account for this, we also ran the regressions for the subsample in which each S1 was linked to only one S2 (n = 60). That is, when two or more S2s named the same S1, we randomly selected one of these S2 responses. The analysis (untabulated) shows that the results are somewhat weaker, but similar to those of the final analysis. This indicates that our approach of treating multiple responses does not greatly affect our findings.

Overton, 1977). Because we did not find any significant differences between the responses of early and late waves of returned surveys, non-response bias does not appear to be a concern.

Common method biases were reduced by following recommendations such as obtaining measures of the predictor and criterion variables from different sources, protecting respondent anonymity, and reducing evaluation apprehension (Podsakoff et al., 2003). Although we tried to mitigate common method bias, we still assessed its presence by performing the Harman's single factor test. For each sample (i.e., S1 and S2), the principal component factor analysis did not result in a single factor and the first factor did not account for most of the variance.[10] These results suggest that the potential for common method bias is low.

5. Measures and validation

Scales used to measure the constructs were drawn from the available literature. For each multi-item construct we calculated individual scores as mean scores for the combined scale items. An overview of the measures is can be found in Appendix 1.B.

5.1 Dependent variables

We examine MCS imitation in two ways. Using alternative measures mitigates the possibility that results using one measure would capture some factor other than imitation, and that this factor would be driving our results.

As a first measure, we asked the S1s at the end of the survey questionnaire to indicate the extent to which they consider the control mechanisms their firm is using towards its suppliers as being imitated from the buyer firm, on a five-point scale ranging from "to a very low extent" to "to a very large extent". This measure reflects in a direct way whether controls that the buyer uses with the S1s result in imitative usage of controls by these same S1s with S2s. In what follows we refer to this measure as the *direct* measure of MCS imitation.

The second measure examines MCS imitation in the form of upstream MCS similarity between the buyer and the S1 and between the S1 and the S2. To this end, we constructed a list of different mechanisms to exercise transaction partner control, which are applicable to

[10] For the dependent variables reported by S1 and S2, the analysis yields three factors with eigenvalues > 1. The first factor captured 42 percent and 43 percent of the variance for S1 and S2 respectively. For the independent and control variables, three factors with eigenvalues > 1 resulted from the analysis. The first factor explained 50 percent of the total variance.

various types of interfirm relationships, based on an extensive literature review (e.g., Chen et al., 2009; Choudhury & Sabherwal, 2003; Das & Teng, 2001; Dekker, 2004; Groot & Merchant, 2000; Mahama, 2006; Mouritsen et al., 2001; Stouthuysen et al., 2012). Both formal and informal controls were included. More specifically, a distinction between the three different types of control outlined above was made. The outcome control construct attempts to capture the extent to which the buyer/supplier relied on outcome controls, whereas the behavior control construct reflects the extent to which the buyer/supplier employed behavior controls. The social control construct was used to assess the extent to which the buyer/supplier applied social controls. All these MCS items were scored on a five-point scale ranging from "used not at all" to "used extensively". We asked the S1s to rate the extent to which the buyer used specific control mechanisms towards them, and asked the S2s to rate the extent to which the S1 used specific control mechanisms towards them.

The similarity of use for each of the three types of control was then determined as illustrated in Equation 1, derived from Westphal et al. (2001) and McFarland et al. (2008) and adapted to our study context. We first took the absolute difference between the control mechanisms used by the buyer towards the S1 (labeled CB in Equation 1) and the control mechanisms used by the S1 towards the S2 (labeled CS in Equation 1). We then converted this into a similarity score by subtracting it from the highest value possible. Higher scores thus indicate greater imitative use of control.

$$y_i = 5 - \left|CB_{ij} - CS_{ij}\right| \quad (1)$$

where

i = control mechanism identifier, 1-3;

j = triad identifier, 1-91.

Finally, we model total MCS imitation as a second-order composite latent variable composed of the first-order similarity measures. This corresponds to what Jarvis et al. (2003) described as a Type II reflective first-order, formative second-order model. The MCS imitation construct is treated as a formative construct because the various dimensions are not assumed to have a common underlying meaning. Rather, MCS imitation is seen as a linear combination of each similarity factor. In what follows we refer to this measure as the *indirect* measure of MCS imitation.

5.2 Independent variables

Environmental uncertainty refers to the degree to which the S1's external environment in terms of its competitors' actions, technology, and consumer tastes and preferences is characterized by an absence of pattern, unpredictability, and unexpected change. It is measured using a multi-item scale adapted from Srinivasan et al. (2011).

Affective commitment reflects the S1's desire to continue the relationship because of the positive affect toward and identification with the buyer firm. The measure is based on the multi-item scale developed by Kumar et al. (1995).

The independent variables were measured from the S1's perspective, as the S1's perceptions are considered to be the most important predictors of their imitative behavior. For both measures, a five-point Likert-type scale was used anchored by "strongly disagree" and "strongly agree."

5.3 Control variables

It is important to distinguish the variables that we hypothesize to impact MCS imitation from other factors that may affect a firm's propensity to imitate. Therefore, we control for sample characteristics such as S1's firm age and size. It has been argued that a lower level of experience might lead to greater imitative behavior (e.g., Henisz & Delios, 2001). Firm age was measured in number of years since the foundation of the firm. Previous studies also indicate that organizations are most likely to imitate the strategies of their size peers (e.g., Haveman, 1993). Given that the buyer in our study is a large firm, suppliers that are large in size as well would be most inclined to imitate. Firm size was measured using a categorical scale, and included in the model as a dummy variable with number of employees larger than 1000 or number of employees less than or equal to 1000. Furthermore, we control for relationship duration and contact frequency between the buyer and S1 as these might be indicative for strong ties and exert an important impact on the occurrence of imitation (e.g., Strang & Still, 2006). This stems from the idea that long-term relationships and frequent contacts between firms may lead to an improved exchange of information and thereby may amplify imitation. Relationship duration was operationalized as a single-item measure that asked the S1s to indicate the number of years and months they have been working together with the buyer firm. Contact frequency measures the perceived level of interaction between the S1 and the buyer. This multi-item measure was based on Doney and Cannon (1997), using a five-point Likert-type scale with anchors at "strongly disagree" and "strongly agree."

In addition, we recognize that dependence of the S1 on the buyer could increase the adoption of similar practices (e.g., Kostova & Roth, 2002). The general reasoning is that organizations conform to other organizations on which they are dependent to increase their perceived validity by those organizations. Dependence was operationalized as a single-item measure that asked the S1s to report the percentage of total sales accounted for by the buyer firm, of which the natural logarithm is used in our model.[11]

Given our focus on imitation effects it is also important to ensure that our findings are indeed the result of firms' responses to the actions of other firms. More specifically, our central arguments relate to imitation on behalf of the S1 in response to observing the MCS used by the buyer, resulting in similar MCS being used in interactions with S2s. The complication is, however, that what looks like imitation may simply be firms' independent responses to a common external stimulus (Lieberman & Asaba, 2006; Ordanini et al., 2008). While our direct measure of MCS imitation helps alleviate these concerns, one might argue that our indirect measure captures similarity and not necessarily imitation. We therefore include a number of variables to control for the emergence of similar behaviors due to a common source. Similar MCS may, for instance, also be shaped by a common cultural context. Scholars have noted that different preferences for certain types of control exist in various countries (e.g., Li et al., 2010). The national culture may constitute an important determinant of the value that managers share regarding appropriate business practices in the supply chain. According to this logic, buyers and S1s located in the same country might be using similar MCS because of their cultural background, and not because the S1 decides to imitate the buyer. While the buyer's headquarters in our study are located in the US, data were collected from S1s located in different geographical regions. As such, we constructed a dummy variable equaling 1 if the S1 is also located in the US, and 0 if the S1 is located elsewhere. Besides location, we considered industry similarity between the buyer, the S1 and the S2, because similar conditions within the specific supply chain might also have a positive influence on the similarity of use of MCS. In fact, the relationship between MCS used by the buyer and the supplier may be due to the buyer and supplier being subject to similar

[11] The inclusion of dependence as a control variable addresses the possibility of compliance driving our results. While we reason that observed similarities in MCS in the supply chain are due to mimetic rather than compliant adoption, we must nevertheless control for this factor. If the buyer would be forcing the S1s to adopt specific MCS in the supply chain, the S1s' responses to this pressure will be determined by the degree to which they are dependent on the buyer. The more dependent the S1 is on the buyer, the more it will comply. That is, S1s who are highly dependent on the buyer would comply with the requirements coming from the buyer in order to secure their position; S1s who are less dependent on the buyer would have greater freedom to make autonomous decisions and may deviate from the buyer's demands.

conditions that cause the observed levels of MCS usage by both firms. In this sense, the buyer and S1 would be using similar MCS in response to these conditions, and not because the S1 is imitating the buyer. One way to measure similarity of conditions is the industry in which firms operate (e.g., Haunschild, 1993). A dummy variable was used for similar (i.e., all manufacturing) or non-similar (i.e., not all manufacturing) industries between the buyer, the S1 and the S2. [12,13]

5.4 Measurement validation

Multi-item measures were subjected to a systematic assessment of unidimensionality, reliability and validity. Given that the indirect measure of MCS imitation was operationalized as a formative construct, for which conventional techniques are not appropriate for assessing their reliability and validity (Jarvis et al., 2003), we did not include this construct in the validation process. For the other, reflective, constructs we first evaluated the item sets on the basis of item-to-total correlations and exploratory factor analysis. Items with low item-to-total correlations (< 0.30; Flynn et al., 1994) or low factor loadings (< 0.30; Hair et al., 1998) were dropped. For each construct, we compared the remaining items with our conceptual definition and concluded that none of the initial conceptualizations changed significantly.

We further validated our measures via confirmatory factor analysis using LISREL 8.8 (Jöreskog & Sörbom, 1996). Because of the large number of indicators and constructs, and the limitation on sample size, different confirmatory factor models were estimated according to Bentler and Chou (1987).[14] That is, we divided the multi-item constructs into theoretically plausible groups and ran separate models for these groups.[15] Model 1 included one part of the explanatory variables (environmental uncertainty), and Model 2 included the other part of explanatory variables (affective commitment and contact frequency). Model 3 included one

[12] Another way of testing for similar conditions is to see whether the effects still hold when conditions are very dissimilar. Therefore, we also ran the regressions for the subsample in which industries are non-similar (n=44). The analysis (untabulated) yields results that are almost identical to those of the main analysis, providing confidence that similarity in industry is not responsible for our results. This observation thus supports the imitation perspective, stating that firms often show remarkable similarities that cannot be explained by industry type alone.

[13] We also investigated industry similarity in more detail. That is, we looked at whether or not the buyer, the S1 and the S2 shared the same SIC code at the one-digit and two-digit levels. When including this as dummy variables into the regression models, we did not find any significant effect and the results for the other variables remained unchanged.

[14] We followed the recommendation to maintain a parameter-to-sample ratio of at least 1:5. It should be kept in mind, however, that the covariance-based method as we used here might still be sensitive to the relatively small sample size.

[15] We also estimated a series of alternative models with different combinations of constructs grouped together. This leads to highly comparable results as those of the models reported here.

part of the dependent variables (outcome and behavior control) reported by S1, while Model 4 included the other part of dependent variables (social control) reported by S1. Similarly, Model 5 included one part of the dependent variables (outcome and behavior control) reported by S2, while Model 6 included the other part of dependent variables (social control) reported by S2. To evaluate model fit, we used multiple fit criteria as recommended by Hu and Bentler (1999). The results show that the measurement models demonstrated a reasonably good fit: (1) Model 1: $\chi^2(9) = 18.57$, SRMR = 0.03, CFI = 0.98, and IFI = 0.98; (2) Model 2: $\chi^2(8) = 20.48$, SRMR = 0.12, CFI = 0.93, and IFI = 0.93; (3) Model 3: $\chi^2(13) = 41.24$, SRMR = 0.07, CFI = 0.92, and IFI = 0.92; (4) Model 4: $\chi^2(2) = 6.08$, SRMR = 0.03, CFI = 0.98, and IFI = 0.98; (5) Model 5: $\chi^2(13) = 26.15$, SRMR = 0.08, CFI = 0.90, and IFI = 0.91; and (6) Model 6: $\chi^2(2) = 3.64$, SRMR = 0.02, CFI = 0.98, and IFI = 0.99. This provides evidence for unidimensionality.

We then assessed the scale reliabilities on the basis of Cronbach's alpha (Cronbach, 1951) and composite construct reliability (Fornell & Larcker, 1981). With one exception, the results met the recommended criteria. The one exception, outcome control, had an alpha value and composite reliability of around 0.60. While we recognize that these values are relatively low, the measure was deemed acceptable for further analysis.[16]

To test convergent validity, we inspected the parameter estimates and their corresponding t-values (Anderson & Gerbing, 1988). The results show that all the indicators are significantly related to their underlying theoretical constructs and, hence, exhibit convergent validity.

We used several methods to test discriminant validity. First, for each construct, we compared the average variance extracted with the shared variance with any other constructs (Fornell & Larcker, 1981). The average variance extracted should be greater than the highest variance that the construct shares with any other construct. This was true for all constructs, except for outcome control reported by S1, for which the highest shared variance was with behavior control, and slightly higher than the average variance extracted of the outcome control construct. Second, to address these issues, we also performed paired construct tests for the control constructs in our study (Anderson & Gerbing, 1988). Models in which the

[16] Some scholars recommend against automatically applying the cutoff criterion of 0.70 (Cho & Kim, 2015). Measures that are newly developed, in particular, can be accepted with reliabilities around 0.60. Other studies have indicated that, for two or three item scales, relatively low values are not uncommon. In this case, it has been suggested to alternatively look at the average inter-item correlation to evaluate item interrelatedness (Cho & Kim, 2015). For the outcome control construct, this equals 0.30, which lies within the proposed optimal range of 0.20 to 0.40.

correlations between each pair of constructs were constrained to unity were estimated and compared to the original unconstrained model. For all pairs of constructs, we found a significant difference in chi-square values for the constrained and unconstrained model as reported in Table 1.1, demonstrating evidence of discriminant validity. Thus, in the light of these favorable results, we consider the constructs to be adequate for further testing.[17]

Table 1.1: Tests for discriminant validity

Model Comparison	Unconstrained model χ^2	Constrained model χ^2	Δdf	$\Delta\ \chi^2$
S1				
Outcome control vs. Behavior control	41.24	44.15	1	2.91
Behavior control vs. Social control	79.75	262.92	1	183.17
Outcome control vs. Social control	39.24	68.12	1	28.88
S2				
Outcome control vs. Behavior control	26.15	39.28	1	13.13
Behavior control vs. Social control	54.77	106.91	1	52.14
Outcome control vs. Social control	33.57	45.92	1	12.35

$\Delta\ \chi^2$ >10.83 is significant at $p < 0.001$; $\Delta\ \chi^2$ >6.64 is significant at $p < 0.01$; $\Delta\ \chi^2$ >2.71 is significant at $p < 0.10$.

Moreover, it is important to emphasize that we use similarity scores of the control constructs as final measures in the analysis. We inspected the correlations between the similarity measures of the three types of control, and found that these were all significantly below unity. We also examined the variance inflation factors to determine whether the similarity measures were not too highly correlated (Diamantopoulos & Siguaw, 2006). The results show that each variance inflation factor is less than 3.3, providing further support for the distinctiveness of the final constructs.

Finally, when similarity scores are calculated between groups, the results are meaningful only if the measures are invariant across groups (Steenkamp & Baumgartner, 1998). Therefore, before calculating these scores, we tested for measurement invariances of the MCS measures across S1s and S2s. It is recommended to test for both configural and metric invariance. Configural invariance exists when the measures have the same factor structure across groups. This can be tested by examining the degree to which the observed variables fit the latent constructs in each group, allowing factor loadings to vary freely within each group. Metric invariance exists when both the factor structure and the scale of each observed variable are equivalent. This can be tested by constraining the factor loadings to be the same

[17] The difficulty in assigning particular controls to distinct categories has also been acknowledged in the literature (Fryxell et al., 2002). Therefore, some overlap between the types of control, is not completely surprising. Further note that the items of the control constructs were presented in a randomized format which generally poses a more stringent test on discriminant validity (Weijters et al., 2014).

in each group and comparing the fit statistics to those of the unconstrained model. We again estimated multiple confirmatory factor models, including outcome, behavior and social control constructs respectively. Model fit indices for the unconstrained, as well as for the constrained models are depicted in Table 1.2. The results indicate that the three unconstrained models have an acceptable fit and meet the requirement for configural invariance. Moreover, the fit of the constrained models is comparable to that of the unconstrained models, indicating that also the requirement for metric invariance is fulfilled.

Table 1.2: Tests for measurement invariance

Model	Model Fit Indices
Model 1 (Outcome control)	
- Unconstrained	$\chi^2(8) = 13.02$; CFI = 0.91; IFI = 0.92
- Constrained	$\chi^2(11) = 16.18$; CFI = 0.88; IFI = 0.89
Model 2 (Behavior control)	
- Unconstrained	$\chi^2(19) = 70.03$; CFI = 0.92; IFI = 0.92
- Constrained	$\chi^2(23) = 78.60$; CFI = 0.91; IFI = 0.91
Model 3 (Social control)	
- Unconstrained	$\chi^2(19) = 31.67$; CFI = 0.97; IFI = 0.97
- Constrained	$\chi^2(23) = 48.66$; CFI = 0.94; IFI = 0.94

CFI = comparative fit index; IFI = incremental fit index.

6. Results and discussion

Summary statistics and correlations for all variables are reported in Table 1.3. It is noteworthy that our two dependent variables, the direct and indirect measure of MCS imitation, are highly correlated. Moreover, both are significantly positively correlated with environmental uncertainty and affective commitment, as expected. This result should be interpreted with care, though, since it is only a univariate analysis. Significant correlations are also reported between MCS imitation and the other variables, pointing to the importance of including these as controls in our regressions. We elaborate on the multivariate analyses below.

To test the hypotheses, we used ordinary least square (OLS) regression modeling with MCS imitation as function of environmental uncertainty and affective commitment, and added the variables firm age and size, relationship duration, contact frequency, dependence, location, and industry similarity as controls. The results are reported in Table 1.4.

Table 1.3: Correlation matrix and summary statistics

Construct	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. MCS imitation – direct														
2. MCS imitation – indirect	0.470**													
3. Outcome control imitation	0.062	0.441**												
4. Behavior control imitation	0.257*	0.644**	-0.008											
5. Social control imitation	0.499**	0.781**	0.007	0.280**										
6. Environmental uncertainty	0.455**	0.262*	-0.167	0.400**	0.231*									
7. Affective commitment	0.333**	0.405**	0.178	0.195	0.364**	0.219*								
8. Age S1	0.375**	0.217	-0.094	0.125	0.310**	0.407**	0.395**							
9. Size S1	0.401**	0.283**	-0.039	0.294**	0.258*	0.210	0.274*	0.475**						
10. Relationship duration	0.479**	0.458**	-0.052	0.213*	0.589**	0.256*	0.290**	0.589**	0.273*					
11. Contact frequency	0.613**	0.441**	0.035	0.287**	0.451**	0.588**	0.234*	0.487**	0.283**	0.556**				
12. Dependence	0.133	0.073	-0.001	0.021	0.099	0.208*	0.046	0.076	-0.173	0.030	0.501**			
13. Location	-0.219*	0.071	0.266*	0.046	-0.104	-0.127	0.056	-0.206	-0.316**	-0.085	-0.206	-0.038		
14. Industry similarity	0.156	0.049	-0.134	0.226*	0.004	0.068	-0.076	0.327**	0.390**	0.207*	0.184	0.047	-0.198	
M	3.40	4.15	4.12	4.31	4.01	3.58	3.54	55.20	0.67	8.33	3.32	0.21	0.60	0.52
SD	0.91	0.52	0.69	0.73	1.02	0.97	0.60	48.02	0.47	8.36	0.78	1.06	0.49	0.50

* $p < 0.05$; ** $p < 0.01$ (two-tailed)
M = mean; SD = standard deviation.

Table 1.4: Regression analysis results

	Dependent variable: MCS imitation – direct		**Dependent variable:** MCS imitation – indirect		**Dependent variable:** Outcome control imitation		**Dependent variable:** Behavior control imitation		**Dependent variable:** Social control imitation	
	Std. Coeff.	t-value	Std. Coeff.	t-value	Std. Coeff.	t-value	Std. Coeff.	t-value	Std. Coeff.	t-value
Independent variables										
Environmental uncertainty	0.150	1.466	0.040	0.356	-0.352**	-2.732	0.407**	3.381	0.007	0.065
Affective commitment	0.167†	1.842	0.282**	2.855	0.211†	1.845	0.126	1.175	0.201*	2.100
Control variables										
Age S1	-0.167	-1.483	-0.303*	-2.476	-0.046	-0.322	-0.323*	-2.432	-0.205†	-1.724
Size S1	0.173†	1.669	0.187	1.661	0.001	0.006	0.213†	1.746	0.135	1.236
Relationship duration	0.192†	1.672	0.326*	2.617	-0.226	-1.561	0.148	1.095	0.551***	4.559
Contact frequency	0.438**	3.003	0.327*	2.062	0.484*	2.637	0.042	0.246	0.145	0.941
Dependence	-0.094	-0.888	-0.062	-0.537	-0.157	-1.180	-0.040	-0.319	0.040	0.363
Location	-0.083	-0.971	0.151	1.633	0.263*	2.454	0.157	1.566	-0.059	-0.659
Industry Similarity	0.013	0.140	-0.004	-0.039	-0.063	-0.550	0.221*	2.075	-0.123	-1.288
Model Fit										
R^2	0.50		0.41		0.21		0.31		0.45	
F-value	8.99***		6.29***		2.36**		4.01***		7.27***	

† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (two-tailed)

The regression analysis results for the *direct* measure of MCS imitation indicate that a large part of the variance is explained (R^2 = 50%). Although H1 predicted a positive influence of environmental uncertainty on MCS imitation, this did not turn out be significant. The results do show that firms are more likely to imitate in case of high levels of affective commitment ($\beta = 0.17$; $p < 0.10$), in support for H2. Likewise, the regression analysis results for the *indirect* measure of MCS imitation, indicate that a large part of the variance is explained (R^2 = 41%). Again, H1 is not supported, as the results show no significant relation between environmental uncertainty and MCS imitation. Further, we find that affective commitment ($\beta = 0.28$; $p < 0.01$) is positively related to MCS imitation, as predicted in H2.

We also comment briefly on the control variables. The age of S1 shows a negative coefficient, indicating that newer or less experienced firms are more likely to imitate compared to their older counterparts. The size of S1 has a positive effect, suggesting that firms are inclined to copy the practices of similar sized others. The results further show that relationship duration and contact frequency lead to more imitative use of MCS. For dependence, no significant association with MCS imitation is found. The variables location and industry similarity are not significant either.

In general, the findings for the direct and indirect measure of MCS imitation are highly comparable and, together, they indicate that a large variance of MCS usage in the supply chain can be explained as imitation. Based on this, it appears that managers indeed look for directions outside their organizational boundaries, when designing their MCS.

Nevertheless, because only limited support was found for our hypotheses when looking at overall MCS imitation, we decided to further examine how each of the control types are related to the imitation conditions. After all, it is possible that, under certain conditions, particular types of control are less or more likely to be imitated. In fact, given the specificity of each type of control, different conditions may favor imitation of different types of control. Thus, to further explore the antecedents of MCS imitation and to clarify the types of control that are being imitated, we estimated separate regression models for the different types of control (i.e., three first-order factors in our model). These dependent variables are called outcome, behavior, and social control imitation, and refer to imitation of the buyer's use of outcome, behavior and social controls by the S1 respectively. As shown, distinct effects for each particular type of control are found.

With regard to environmental uncertainty, results indicate that there is a significant, but negative, relation with outcome control imitation ($\beta = -0.35$; $p < 0.01$). An argument for this could be that practices previously adopted by others are only influential if these practices are perceived as relevant (Greve, 1998; Li et al., 2015). When faced with high levels of uncertainty, suppliers may realize that it is particularly difficult to select specific outcome targets and to monitor the achievement of these targets (Harmancioglu, 2009; Langfield-Smith, 2008), which might inhibit the supplier to imitate this type of control. The results for behavior control imitation, in contrast, show that the relation with environmental uncertainty is positive ($\beta = 0.41$; $p < 0.01$). Since behavior MCS are considered as being more effective in situations of uncertainty, because they focus on the required behaviors to generate certain outcomes and are therefore better suited to deal with uncertainties (Harmancioglu, 2009; Langfield-Smith, 2008), the supplier might be motivated to imitate especially this type of control. As such, although environmental uncertainty leads to a preference for imitation, by its own nature it also puts constraints on the use of particular controls and determines the relative preference. When environmental uncertainty is high, suppliers seem to recognize that imitating outcome controls is not the best option, and rather opt for imitating behavior controls. Further, the relation between environmental uncertainty and social control imitation was not found to be significant. The absence of such finding suggests that besides their relevance, practices should also be perceived as transferable in order to be helpful (Li et al., 2015; Strang & Still, 2006). Social controls, in this regard, do not stipulate outcomes or behaviors in advance, but involve socialization activities that focus on creating common values and beliefs, and getting supply chain partners to accept goals as their own (Cousins et al., 2008; Langfield-Smith, 2008). Even though these socialization practices are observed, their results rely on the interaction of the specific parties involved, and may not be easily transferred from one relationship to another. This makes imitation difficult, and hence, might provide an explanation for the finding that it does not take place for social control.

In sum, these findings suggest that uncertainty and imitation relate in ways that are more complicated than commonly assumed, and may help to explain the insignificant impact on MCS imitation in general as presented above. In fact, while environmental conditions may create the uncertainty that typically drives imitation, it is the perceived relevance and transferability that determines whether suppliers will mimetically adopt specific controls used by the buyer. More specifically, when we make the split-up between imitation of various control types, our findings suggest that suppliers are selective in what they imitate, in

particular by copying those controls that seem to be most appropriate. Thus, in line with previous findings on the impact of uncertainty, mimickers show evidence of some deliberateness in their imitative behavior (Gaba & Terlaak, 2013).

Turning to the effect of affective commitment, we find support for a positive relation with imitation of practically all control types. This result is consistent with previous work explaining how relational aspects may impact the transfer of organizational practices (Kostova & Roth, 2002).

Besides the general observation that suppliers are more likely to imitate when they feel more committed to the buyer firm, our findings show that this is the case for outcome control imitation ($\beta = 0.21$; $p < 0.10$) and social control imitation ($\beta = 0.20$; $p < 0.05$), but that the effect did not reach significance for behavior control imitation. These findings may follow from the fact that commitment and identification with an organization often results from a strong belief in and acceptance of the values and goals of that organization. Therefore, the supplier may be motivated to use similar outcome controls as set by the buyer towards its own suppliers in order to make sure that specific targets are met, particularly because they may believe this would be beneficial to the achievement of desired results and organizational goals. As behavior controls are not that much result oriented (Das & Teng, 2001; Langfield-Smith, 2008), this process might be less pronounced for this type of control. Moreover, given that the supplier is inclined to internalize and identify with the values and goals of the buyer, this may enable a higher reliance on social controls to manage the relationship (Cousins et al., 2008; Langfield-Smith, 2008). Since the controls used by the buyer serve as the supplier's reference point for its own decision-making, the prevalence of social controls in the first-tier relationship may consequently stimulate the supplier to also use these in the second-tier relationship. In general, as commitment proves to be an important driver of MCS imitation, this suggests that imitation in supply chains is not devoid of relevant affective content.

Regarding the control variables, the results again show an overall negative coefficient for firm age. Another factor influencing the propensity to imitate is firm size, specifically related to behavior controls. This is in accordance with the reasoning that, when environmental conditions are uncertain, firms are inclined to copy the practices of similar others. Our findings, in particular, complement previous studies suggesting that large firms copy the actions of other large organizations. The results further indicate that the effect of relationship duration is primarily related to the imitation of social controls. The long-term cooperation between the buyer and supplier could, for instance, resolve the ambiguity of issues such as

how social controls entail the development of shared understandings and alignment of goals, and in the end lead to organizationally desired objectives, enhancing the imitation of social controls. For contact frequency we find a positive impact on outcome control imitation. One reason for this could be that through frequent interactions, the supplier might gain a better understanding of the value of the outcome controls used by the buyer and, as a result, will engage more actively in outcome MCS imitation. Furthermore, although one could argue that dependence would influence diffusion in the supply chain, it was not significantly related to any of the control types. Finally, it is worthwhile to note that we also controlled for the country where the firms are located and for the industries in which the firms operate. The findings show that when the buyer and S1 are based in the same country, greater similarity in the use of outcome controls is observed. We further detect that industry similarity between the buyer, the S1 and the S2 has a positive influence on similarity of behavior controls. This confirms that it is important to include these variables in our model in order to rule out alternative explanations for similarity in the use of MCS. Crucially though, our results are robust when controlling for influences from a common location or similar industry, giving some assurance that the above reported effects can indeed be attributed to imitation.

Taken together, although we find imitation effects to be present within the supply chain, these effects differ depending on the particular type of control. In fact, the conditions under which they operate seem to determine which type of control the supplier will imitate from the buyer. As such, our findings are more nuanced than initially predicted, and provide some interesting insights into the mechanisms behind MCS imitation. It has been noted that imitative behavior can occur for various reasons. From the traditional perspective of institutional theory, firms submit to institutional pressures in the field to maintain their social legitimacy. One could thus argue that, enhanced by institutional pressures, MCS would be blindly copied by the supplier from the buyer, without subjecting them to further rational evaluation. In this study, however, we rather see a deliberate way of imitating, as suppliers are not tempted to do so under any circumstances. Managers tend to decide in a careful manner whether or not to imitate their partner's use of MCS. Consistent with previous research, these findings suggest that, although organizations may be influenced by institutional pressures aiming at social legitimacy, purposive efficiency seeking behavior will continue to be present in organizations when designing MCS (Vosselman, 2002). This is in line with the proposition that imitation is not always as "irrational" as sometimes presumed by institutional theory (Lounsbury, 2008). Rather than viewing imitation as a mindless

process by which organizations unconditionally imitate each other, imitation may be better understood as an effortful accomplishment. More specifically, our findings suggest that organizations imitating controls in the supply chain try do this in a thoughtful way, especially by making deliberate decisions regarding whether and what exactly to mimic under which conditions.

7. Conclusion

This study investigates the imitation of MCS in supply chains. The focus is on whether the use of MCS by the buyer with the S1s results in imitative MCS usage by these S1s with the S2s. To this end, a survey was conducted using a unique sample of vertically linked buyer-supplier-supplier triads.

Our results support the existence of MCS imitation in the supply chain. More specifically, we find that how S1s control the S2s is explained, to a certain degree, as the S1s imitating how their buyers controlled them. Given extensive prior empirical support for indicators in individual transactions to explain MCS usage, our results are intriguing and suggest that the phenomenon of MCS imitation is important to consider. In addition, empirical evidence for the drivers of MCS imitation is provided. The effects, however, are not similar for all types of control. By making a distinction between imitation of outcome, behavior, and social controls, the study reveals that different factors have different effects on each particular type of control. Thus, in an attempt to examine the antecedents of MCS imitation, we did not only find evidence on *when* firms are more or less likely to imitate, but also on *what* is being imitated under those conditions.

This study makes several contributions. We add to the accounting literature by examining the role of imitation in explaining the use of MCS in supply chains. By doing so, we acknowledge that the effects of firm behavior are not confined to dyadic relationships, and that interactions between vertically connected dyads are important to consider. Interfirm linkages within the supply chain are specifically found to be important mechanisms for the diffusion of organizational practices and structures. These aspects are critical for a more complete understanding of the use of MCS within supply chains. This study has important implications for management control practice as well. In particular, this study points out that control decisions can have consequences not only in the focal dyadic relationship, but also in adjacent relationships in the supply chain. Therefore, we believe that firms need to capture both the direct and indirect effects of their control decisions. While obtaining a complete

model for all network effects is probably impossible, it is our contention that firms that are aware of MCS imitation in different parts of the supply chain should be better able to control their upstream interactions. In fact, whether or not managers desire their MCS to be imitated and passed on, this may occur nonetheless. By recognizing the conditions under which MCS imitation is more or less likely to happen, managers should be able to organize themselves to provide the best chance for imitation when it is desired and the least chance for imitation when it is not. Moreover, managers should be aware that they themselves might be engaging in imitation, and should consider in advance whether it is in their best interest for the MCS to spread in this manner. As such, managers who are aware of these effects may be able to maximize the usefulness of their own imitation of other firms' MCS practices within the supply chain.

We recognize that this study is not without limitations, but at the same time this provides interesting opportunities for further research. For example, we focused on relationships between a consumer goods manufacturer and its first- and second-tier suppliers. Further research could examine a broader range of industries and other types of relationships. Furthermore, although our sample size is quite comparable to other studies that have relied on matched samples, and is regarded as adequate for the used statistical techniques, a larger sample size would have provided more confidence in our results. Another limitation relates to the measures. While the scales used to measure the MCS constructs were based on existing literature, they were not included before in a study in this exact form. We attempted to construct a list of very specific control systems in order to better capture the phenomenon of imitation. The validation of the measures, however, pointed to some weaknesses, especially for the outcome control construct, and we recognize that the scale items for this construct should be refined. The use of similarity scores for our dependent variables might also raise some concerns. We did include a more direct measure of imitation, ensuring that our results are indeed driven by upstream MCS imitation in the supply chain, but as this measure only pertains to MCS imitation in general, further research is important to see whether our results regarding imitation of the specific types of control also hold when other operationalizations are used. Moreover, we note that the explanatory variables mainly related to the first-level dyad, while limited information was collected on the conditions of the second-level dyad. Recall that we have chosen the factors investigated in this study as predictors of MCS imitation, and first-tier relationship characteristics in particular were argued to play an important role. Imitation theories generally point to predictive factors outside of the focal

relationship itself. Nevertheless, extending our framework by also considering second-tier relationship characteristics, could provide some further clarifications on the MCS choices. In addition, while this study examined MCS imitation going up the supply chain, it would be interesting for further research to find out whether a similar process may occur moving downstream. Another avenue for further research has to do with the precise motives for this imitative behavior. As pointed out above, imitation may be driven by both social and economic considerations, and it is hard to disentangle these two sets of effects. More research is necessary to further clarify the underlying reasons.

In conclusion, we believe this study provides several new insights. The findings support the argument that the network perspective is important for a better understanding of the adoption of MCS, and particularly shed light on the occurrence of MCS imitation in supply chains.

APPENDICES

Appendix 1.A: Sample characteristics

	Average value	
Age S1 (number of years)	55.20	
	Frequency in sample	**Percentage of sample**
Size S1 (number of employees)		
< 100	2	2
100 – 500	9	10
501 – 1000	18	20
> 1000	58	64
Unknown	4	4
Location S1		
Africa	1	1
Asia	2	2
Australia	0	0
Europe	32	35
North America	55	60
South America	1	1
Industry Sector S1		
Manufacturing	62	68
Transportation	4	4
Finance & Real Estate	1	1
Services	18	20
Multiple	6	7
Industry Sector S2		
Manufacturing	53	58
Transportation	9	10
Finance & Real Estate	0	0
Services	29	32
Multiple	0	0

N = 91

Appendix 1.B: Survey measures

	Measurement Model Estimates			
	Std. Coeff.		t-value	
MCS imitation – direct [a] *(directly reported by S1)* Please indicate the extent to which you consider the control mechanisms your firm is using towards its suppliers as being imitated from the client firm.	N.A.			
MCS imitation – indirect	S1	S2	S1	S2
(buyer's use of control mechanisms towards S1 reported by S1 and S1's use of control mechanisms towards S2 reported by S2) Please indicate the extent to which the client firm is using the following control mechanisms towards you as a supplier.				
Outcome control [b] (S1: α = 0.62; CR = 0.60; AVE = 0.34; HSV = 0.37) (S2: α = 0.55; CR = 0.58; AVE = 0.33; HSV = 0.14)				
Open book accounting to create transparency in supplier's results.	0.414	0.444	3.723	3.452
Financial incentive system in the form of benefit sharing.	0.706	0.456	6.690	3.538
Information systems designed to help monitoring the outputs delivered by the supplier.	0.602	0.766	5.642	5.076
Establishment of target costs for the supplier.*				
Behavior control [b] (S1: α = 0.91; CR = 0.90; AVE = 0.70; HSV = 0.56) (S2: α = 0.80; CR = 0.83; AVE = 0.55; HSV = 0.30)				
Information systems designed to help monitoring behavior of the supplier.	0.728	0.619	7.923	6.078
Joint alliance board serving as an authority structure in which both partners have control over the activities performed.	0.899	0.899	10.851	9.666
Interorganizational chart to clarify the roles and responsibilities of the partners in the relationship.	0.970	0.755	12.378	7.743
Task groups including employees of both partners to carry out the activities and to facilitate and monitor the processes.	0.723	0.535	7.843	5.115
Open book accounting to create transparency in supplier's processes.**				
Periodic meetings to facilitate direct observation of the behavior of the supplier.**				
Social control [b] (S1: α = 0.90; CR = 0.90; AVE = 0.69; HSV = 0.42) (S2: α = 0.88; CR = 0.88; AVE = 0.65; HSV = 0.31				
Face-to-face communication to help establish shared norms and beliefs.	0.811	0.745	9.090	7.940
Joint task groups or cross-functional teams including employees of both partners to enhance shared decision making and goal setting.	0.701	0.817	7.403	9.047
Regular joint meetings to understand the relationship's goals, values and norms.	0.865	0.897	10.030	10.394
Workshops and training practices to stimulate shared understandings and common goals.	0.921	0.754	11.067	8.075

Open book agreement to enhance trust between the partners in the relationship.**				
Joint alliance board serving as an authority structure in which both partners are involved to enhance shared decision making and goal setting.**				
Environmental uncertainty [a] (α = 0.93; CR = 0.94; AVE = 0.72; HSV = 0.56)				
The rate at which products/services are becoming obsolete in the industry is very fast.	0.921		11.365	
Actions by competitors are hard to predict.	0.880		10.503	
Demand and consumer tastes are hard to predict.	0.778		8.679	
The production technology in this industry changes fast.	0.836		9.681	
Technological advances in this industry are hard to predict.	0.834		9.645	
Consumer demand for our products/services is very unstable.	0.851		9.949	
Affective commitment [a] (α = 0.72; CR = 0.75; AVE = 0.53; HSV = 0.25)				
Even if we could we would not drop the client firm because we like being associated with them.	0.641		5.371	
We want to continue as a supplier of the client firm because we genuinely enjoy our relationship with them.	0.446		3.969	
Our positive feelings towards the client firm are a major reason we continue to work with them.	0.991		7.267	
Relationship duration				
Length of relationship with client firm:… years.	N.A.			
Contact frequency [a] (α = 0.81; CR = 0.82; AVE = 0.60; HSV = 0.48)				
The client firm's personnel often visit our place of business.	0.790		7.924	
The client firm's personnel make more calls than those of other client firms.	0.763		7.614	
The client firm's personnel spend considerable time getting to know our people.	0.764		7.634	
Dependence				
Percentage of total sales from client firm:… %.	N.A.			

[a] Items measured on a five-point Likert-type scale anchored by 1 = "strongly disagree" and 5 = "strongly agree."
[b] Items measured on a five-point Likert-type scale anchored by 1 = "used not at all" and 5 = "used extensively."
Notes: N.A. is not applicable; * item dropped after inspection of item-to-total correlation; ** item dropped due to low factor loading; all p-values < 0.01; α = Cronbach's alpha; CR = composite reliability; AVE = average variance extracted; HSV = highest shared variance.

MANUSCRIPT II
MANAGEMENT CONTROL SYSTEM IMITATION: PERFORMANCE IMPLICATIONS

Abstract

This study investigates MCS imitation and its performance implications in a supply chain setting. MCS imitation takes place when MCS that buyers use with first-tier suppliers result in similar MCS usage by these first-tier suppliers with second-tier suppliers. We predict that, while imitating successful MCS has the potential to improve performance, its effect weakens in the presence of transaction context dissimilarity between both relationships. Our hypotheses are tested using survey data collected from firms involved in the supply chain network. In line with our expectations, we find that the effectiveness of MCS imitation hinges upon the level of transaction context similarity. Specifically, dissimilarities in the level of uncertainty and duration of the first-tier and second-tier relationship weaken the association between MCS imitation and performance. Therefore, designers of MCS should not be seeking gains from blind imitation but should consider adapting the MCS to meet the specific relationship needs as prompted by factors such as uncertainty and duration. In sum, the results of this study illustrate that a good understanding of the suitability of MCS imitation is important for performance in the supply chain, and especially point to the critical role of transaction context similarity for MCS imitation to be successful.

1. Introduction

The development of strong interfirm relationships has become more prevalent and important, as the business world has become more globalized and competitive. Various forms of interfirm relationships are being adopted by organizations as competitive tools (Meira et al., 2010). Although interfirm relationships are considered as a source of competitive advantage, it appears that the failure rate of such relationships is quite high (Ireland et al., 2002; Lunnan & Haugland, 2008). This high failure rate suggests that, even when potential benefits are present, firms face substantial difficulties in attaining them. One reason for this is the high level of risk associated with these relationships (Das & Teng, 2001; Langfield-Smith, 2008). In particular, there is the risk of transaction partners not cooperating in good faith, as well as the risk of unsatisfactory performance even when partners cooperate fully. Essentially these risks imply that firms might not achieve the intended or desired objectives of interfirm transactions they engage in (Dekker et al., 2013). One way to deal with these risks is the establishment of appropriate governance structures. The design of proper management control systems (MCS), in particular, seems to be crucial for the management and performance of interfirm relationships (Kang et al., 2012; Li et al., 2010).

In this regard, researchers have devoted considerable effort to explaining firms' governance choices, including the design of MCS, in interfirm relationships. This prior research has mainly relied on economic explanations, but has paid relatively little attention to behavioral and network aspects (Caglio & Ditillo, 2008). In fact, the focus has predominantly been on individual relationships and how organizations *match* MCS with the specific transaction context. The design of MCS in this way is seen as an organization's independent choice as determined by various transaction cost factors. While this perspective is useful to explain how transactions may be optimally managed and controlled, control decisions clearly do not occur in isolation from a broader social context (Chua & Mahama, 2007). One specific consequence of this social context is that MCS choices are likely to be influenced by the opinions and actions of others in their network. According to this, it would be useful to take into account the implications of the larger network of relationships in which individual transactions and also interfirm relationships are situated (Gulati et al., 2000). Such networks, in particular, are considered as having a strong influence on imitative behavior, and may lead organizations to *imitate* the MCS of other organizations to which they are connected (Brass et al., 2004).

Management scholars are paying increasing attention to the phenomenon of imitation. There is ample evidence that individuals and, by extension organizations, rely on observational learning or imitation in the decision-making process (Gaba & Terlaak, 2013; Nikolaeva, 2014). Several studies have examined the processes through which organizations may be influenced by other organizations, as well as the conditions under which imitative behavior occurs. Another point of attention in imitation research concerns the performance outcomes arising from imitative behaviors. It has been suggested that imitation can have diverse possible consequences (Lieberman & Asaba, 2006; Ordanini et al., 2008). There are few studies, however, that have empirically investigated whether there is a link between imitation and performance.

We specifically look at the imitation of MCS in supply chains. The study of imitative behavior is considered to be particularly relevant in this setting, as supply chains typically involve multiple relationships that are connected in various ways (Kumar et al., 2011). It are these networks of relationships that allow organizations to see how others cope with similar situations to their own and thus get some idea as to how to behave themselves. Previous work in this area, for instance, has indicated that interfirm linkages within the supply chain provide an effective channel for the diffusion of management practices (Fu, 2012). This may also be the case for MCS and, hence, lead to the spread of MCS throughout the supply chain. In accordance with the organizational control literature, we focus on MCS used for the ongoing management of the relationship that include the specification and monitoring of outcomes and behaviors, as well as socialization activities such as frequent meetings and communications (e.g., Das & Teng, 2001; Dekker, 2004; Harmancioglu, 2009; Kang et al., 2012; Kirsch et al., 2002; Langfield-Smith, 2008). Operationally, we consider buyer-supplier-supplier triads and investigate upstream MCS imitation in the supply chain. More specifically, MCS imitation is present when the use of MCS by the buyer with the first-tier supplier increases the likelihood of similar MCS being used by the first-tier supplier with the second-tier supplier. That is, suppliers are exposed to the MCS used by the buyer when dealing with them, and these may then serve as models for the MCS used with their own suppliers, giving rise to the phenomenon of MCS imitation.

This study is designed in order to clarify the effectiveness of MCS imitation, based on the notion that effective cooperation depends upon the adoption of proper MCS. Because we expect firms to imitate MCS that have proven to be successful, we take an outcome-based approach to imitation. While it is commonly assumed that imitating successful practices from

other firms has a positive impact on the imitating firm (Haunschild & Miner, 1997), however, we argue that such imitation is not always valuable. In particular, one factor that appears crucial for successful imitation is context similarity (Csaszar & Siggelkow, 2010), reflecting the degree to which practices that work in one context are likely to work in another. Following this reasoning, we investigate the effectiveness of MCS imitation by considering context similarity of the relationships in which the MCS are being spread from one to another. After all, while firms may be inclined to copy successful MCS throughout the supply chain, the exchange conditions in the first-tier relationship do not necessarily mirror those in the second-tier relationship. This raises the question of what happens when firms, imitating MCS, are subject to different transaction contexts. As the literature provides broad support that control design is influenced by critical characteristics of the transaction context, several contextual factors that may affect the use of MCS are taken into account, such as the level of uncertainty surrounding the transaction, the degree of interdependence between the transaction partners, and the duration of the exchange relationship (e.g., Dekker, 2008; Ding et al., 2013; Fryxell et al., 2002; Langfield-Smith, 2008; Van der Meer-Kooistra & Vosselman, 2000; Yang et al., 2011). The ultimate test of whether a form of control is effective is the extent to which an association between the controls used and performance can be established. Because in our setting MCS are copied from the first-tier relationship to be used in the second-tier relationship, we specifically look at the impact on performance in the second-tier relationship, as reflected in a range of relationship outcomes.

Accordingly, we posit that MCS imitation is likely to have favorable effects, specifically in the form of performance spillovers across relationships in the supply chain. However, to the extent that the relevant parties are subject to different conditions, this creates a mismatch between the used controls and the transaction context that weakens the effect of MCS imitation and hampers good performance. We test our model using survey data collected from firms involved in a supply chain triad. As predicted, we find that MCS imitation can positively impact performance, but that this impact crucially depends on the level of similarity in the transaction context. The results show a positive relationship between MCS imitation and performance in situations of high transaction context similarity, whereas the performance benefits substantially weaken when MCS are imitated across relationships with dissimilar transaction contexts. This highlights the importance of a good fit between the controls copied and the context in which the transactions take place.

This study extends prior accounting literature by arguing that, in addition to the dyadic focus on supply chain relationships, it is worthwhile to consider the larger network of relationships when studying MCS choices. More specifically, looking at imitative behaviors in a supply chain triad, we point out that MCS decisions can have consequences not only in the focal dyadic relationship, but also in adjacent relationships in the supply chain. Furthermore, this study contributes to the discussion of the value of imitation by providing a better understanding of the conditions where a stronger propensity to imitate would lead to performance improvements. Our study particularly emphasizes the critical role of transaction context similarity for MCS imitation to be successful. This has important implications for both theory and practice.

The remainder of the paper is organized as follows. In the next section, the theoretical background and hypotheses are described. This is followed by a presentation of the research methodology, after which we discuss our analysis and results. In the final section, conclusions are drawn, together with some limitations and suggestions for further research.

2. Theory and hypotheses

Extant research on the use of MCS in interfirm relationships has generally adopted transaction cost economics (TCE) as its theoretical framework. This stream of research maintains that minimizing transaction costs is the fundamental driver for firms to implement MCS (Williamson, 1985). As such, prior studies have referred to various transaction cost factors as important determinants of MCS choices (e.g., Anderson & Dekker, 2005; Dekker & Van den Abbeele, 2010; Langfield-Smith & Smith, 2003; Van der Meer-Kooistra & Vosselman, 2000). Although TCE-based studies contribute to our understanding of interfirm management control, this understanding might be incomplete in the sense that it does not consider the larger network of relationships in which firms are embedded (Anderson & Dekker, 2014).

TCE is focused on individual economic exchanges, and states that MCS are designed in response to critical characteristics of the specific transaction context. Inherent to this is the treatment of each transaction as a discrete event. It has been recognized, however, that practically any transaction is nested within a broader social context (Granovetter, 1985). From this perspective, control decisions may not only be affected by the characteristics of the transaction context, but also by this social context, and specifically the opinions and actions of others (Gulati, 1998). For these reasons, previous research has argued that transactions

should be seen as part of larger relational networks, and that connections with others can significantly influence control decisions (e.g., Chua & Mahama, 2007; Thrane & Hald, 2006). TCE furthermore posits that the design of MCS is the product of rational choice. It is assumed that several alternative MCS are consciously weighted, and that the decision-maker is able to choose the best one. While managers may strive to make rational choices, however, they often do not have the capacities to do so (March & Simon, 1958). In search for solutions, they may therefore look for directions in their own immediate environment and copy the decisions or actions of other organizations (Cyert & March, 1963). This allows saving costs and time, because they not compare alternatives, but rather make a choice after having observed the actions of other decision-makers, even if this may be suboptimal in terms of selecting among alternatives. Also for control issues, previous research indicated that rationality is more bounded than traditionally assumed, and that organizations often need to rely on learning mechanisms to inform their control decisions (e.g., Mayer & Argyres, 2004; Vanneste & Puranam, 2010).

Taken together, these arguments suggest that social influences and information derived from others are likely to affect MCS choices. This is not to say that characteristics of the specific transaction context are not important, rather we contend that organizations are not atomistic players, and point to the value of incorporating the broader social context.[18] In this regard, scholars have highlighted the importance of the network of relationships in which firms can be placed, as this influences their behavior and performance (Gulati et al., 2000). Such interfirm networks may specifically function as a mechanism for the diffusion of organizational practices and structures (Brass et al., 2004). The fact is that, through these networks, firms are able to observe possible options and strategies that they then might adopt themselves. This may be especially relevant when decision-making is a relative costly process (Ketokivi & Schroeder, 2004). Thus, with regard to MCS design, firms might get some inspiration about how to control their interfirm transactions by looking at how other firms controlled them.

[18] There are some previous studies that incorporated the social context, but these mainly viewed this as emerging over time, in that prior relationships between partners may influence the governance of future relationships between those partners (e.g., Gulati, 1995; Dekker, 2008). In contrast, we refer to the broader social context, and emphasize situations where the use of controls in one relationship affects the use of controls in another relationship, being between different partners in the network.

In this study, we particularly consider buyer-supplier-supplier triads, with each member being interconnected by a vertical relationship.[19] We thus investigate a vertical supply chain that involves dyadic relationships at two levels. The first-level dyad involves the relationship between the buyer and the first-tier suppliers (S1s). The second-level dyad involves the relationship between these S1s and the second-tier suppliers (S2s). When these two dyads are considered in isolation, this provides one picture of two companies dealing with each other (Choi & Wu, 2009b). Bringing them together into a triad, enables us to see different relational dynamics, and specifically how the management of one relationship could have spillover effects in a different one. One process through which this may occur is MCS imitation, where MCS are copied from one dyadic relationship to another dyadic relationship in the supply chain.[20] In particular, taking this perspective, the S1 sits between the buyer and the S2, and may be inclined to control its supplier relationships in a very similar way as the buyer firm controlled them. Specifically in our context, the buyer may use various types of control towards the S1 as part of their day-to-day management. These may then serve as models, examples to emulate or imitate, for the S1 when designing the controls to be used towards the S2. Thus, imitation represents an intended decision on behalf of the S1 in response to observing the MCS used by the buyer, resulting in similar MCS being used in interactions with the S2 (Nikolaeva, 2014). In this regard, it is important to emphasize that the buyer's MCS may be used to inform, but not dictate the design of MCS further in the supply chain. Consistent with previous research, we acknowledge the existence of managerial choice in the design and implementation of MCS (Brignall & Modell, 2000). While it is reasonable to assume that the buyer may influence the S1's choice of MCS in their relationships with the S2s, for example by suggesting and discussing the benefits to be gained through the use of MCS, these will not be strictly imposed by the buyer, and the choice to adopt ultimately lies with the S1. This condition highlights the critical importance of active agency on part of the S1 in the use of MCS. The decision of the S1 to follow the MCS used by the buyer, could therefore be described as voluntary mimicking behavior.

[19] This triad can be seen as one of many subsets of the wider network (Caglio & Ditillo, 2008). The fact is that any focal dyad is influenced by a range of third-party relationships. Our intention is not to obtain a complete model for all network effects. In studying imitative behavior, we confine our attention to one specific triad, consisting of a buyer-supplier and supplier-supplier relationship (Borgatti & Li, 2009).

[20] Although communalities in the supply chain may also stem from coercive pressures, for example when the supplier is required to adopt favorable practices used by the buyer firm, we specifically focus on the mimetic adoption of practices, where the supplier chooses to engage in mimicry of the buyer firm (Braunscheidel et al., 2011). This is important to distinguish imitation from the more general isomorphism phenomenon, where firms may behave similarly but not because one intentionally tries to copy the actions of the other (Ordanini et al., 2008).

In general, imitation is then conceptualized here as resulting from observational learning, where firms view the actions of other firms as informative for their own decision-making (Gaba & Terlaak, 2013). That is, a firm observes the actions taken by others, evaluates them, and then decides whether to imitate or not. More specifically, organizational learning perspectives suggest that organizations will discriminate in their imitation decisions, selecting or avoiding specific actions or practices based on their perceived impact (Baum et al., 2000; Li et al., 2015). This builds on the premise that, by observing others, organizations can potentially learn about the myriad strategies, technologies, and managerial practices produced by the ongoing explorations of others in their environment and imitate those that are successful (Levinthal & March, 1993). According to this logic, organizations will look at the success of decisions or practices adopted by other organizations, and imitate if they believe that these decisions or practices have generated successful outcomes (Haunschild & Miner, 1997). In this sense, mimetic behavior can be considered as rational, because firms imitate if they think the practice is beneficial, and this suggests it might also benefit them.

Such an outcome-based approach to imitation has been used in previous studies, for instance on issues such as entry mode choices (Lu, 2002), organizational hiring patterns (Williamson & Cable, 2003), and electronic commerce applications (Huang et al., 2010). Applied to MCS usage in our setting, suppliers would be likely to assess the MCS used by the buyer against the overall performance of their relationship, and imitate the use of these MCS if this appears to have resulted in success. In terms of implications, organizational learning perspectives generally believe that outcome-based imitation is a useful way for firms to improve their performance. Supporting these arguments, previous research has shown how imitation of successful strategies effectively can lead to higher levels of performance (Brouthers et al., 2005). This suggests that imitation indeed can have a positive impact for the imitating firm.

It is important to recognize, however, that imitation, even of successful practices, is not always valuable. This is because a practice that seems to be successful, prompting other organizations to start imitating it, might turn out to be not so successful under different conditions. Therefore, the extent to which firms benefit from imitation is contingent upon the conditions in which they operate. Specifically in this regard, it can be argued that for another organization's actions to be valuable for the imitator, the organization and its context must be seen as sufficiently similar to that of the imitator (Greve, 1998; Baum et al., 2000). According to this, context similarity has been identified as an important factor for successful

imitation (Csaszar & Siggelkow, 2010). It reflects the degree to which practices that work in one context are likely to work in another. Prior literature cautions against imitation when there is a lack of context similarity. For instance, Kim and Miner (2007) noted that replicating exact strategies that have been successful for other firms without tailoring them to one's own firm may be perceived as safe, but this simple imitation may not be effective because outcomes can depend on the context in which an organization operates. Also Sousa and Voss (2008) indicated that best practices do not work for all firms due to contextual mismatches, and that imitation can lead to suboptimal results. Along the same line, Argote and Ingram (2000) emphasized that, in order for imitation to be successful, the practices that are copied must fit or be compatible with the new context.

The impact of context similarity is particularly relevant for the study of MCS, since an appropriate match between control and context is important. According to the discriminating alignment perspective, transactions which differ in their attributes need to be aligned with governance arrangements which differ in their competencies, in order to accomplish an optimal match (Williamson, 2008). Following this line of thought, misalignment between the transaction context and the control structure has been associated with subsequent transaction problems and poor performance (e.g., Anderson & Dekker, 2005; Hoetker & Mellewigt, 2009; King & Clarkson, 2015). This points out that the control structure should be uniquely tailored to the control needs of the specific transaction, and that it cannot be simply replicated within other transactions (Speklé, 2001). In this sense, the appropriateness of particular controls used in interfirm transactional relationships, is considered to be contingent upon a number of contextual factors related to the transaction in question.

Specifically in this regard, we examine three elements associated with the transaction context that have been identified by previous research as important factors that are relevant for choosing suitable MCS, namely the level of uncertainty surrounding the transaction, the degree of interdependence between the transaction partners, and duration of the exchange relationship. Important causes of uncertainty stem from the environment, such as market and technological fluctuations. The primary consequence of uncertainty is that it warrants a more elaborate use of MCS to anticipate and deal with unforeseeable situations (Dekker, 2008; Ding et al., 2013). Interdependence refers to the condition that outcomes and strategies of a firm are affected by the joint behaviors or activities of both parties. A higher level of interdependence increases firms' reliance upon each other and, as a result, generates a higher need for appropriate MCS to manage these interdependencies (Dekker, 2008; Mahaptra et al.,

2010). The length of cooperation is also an important concept in understanding the use and effectiveness of control in interfirm relationships. Long-term relationships are likely associated with more familiarity from prior experiences and trust between the partners, which may work as alternative MCS, hereby enabling partners to gradually use less hierarchical elements in organizing their relationships (Gulati & Singh, 1998; Dekker, 2008). As such, not only specific characteristics of the transaction, but also factors that relate to the relationship of exchange partners that might affect transactions between them are important to consider. These factors together determine the need for control. MCS choices should then be adequately aligned with these underlying context characteristics in order to be effective. In other words, the degree to which an identical set of controls implemented by different firms leads to similar results, would be dependent on the context in which the transactions take place.

Based on this line of reasoning, it follows that the performance implications of MCS imitation depend upon the alignment between the imitated MCS and the specific transaction context in which they are to be installed. Because in our setting MCS are copied from the first-tier relationship to be used in the second-tier relationship, we specifically look at the impact on performance in the second-tier relationship. In accordance with the above arguments, we contend that alignment in this second-tier relationship is most likely to result if MCS are imitated when the transaction context is similar in the first-tier relationship and second-tier relationship. Otherwise, when the transaction context is dissimilar, imitation would lead to the use of either less or more control than needed given the transaction risks faced, and is expected to hinder good performance (Anderson & Dekker, 2014). For example, for complex exchange relationships in the second-tier involving high levels of uncertainty or interdependencies, imitation would only be effective if the first-tier relationship is also characterized by high uncertainty or interdependencies. If not, a rather simple control structure lacking adequate safeguards would be adopted in the second-tier, exposing the firm to substantial residual risk due to the insufficient use of controls. By contrast, the potential consequences of imitating an excessively complex control structure to a simpler relationship might include a loss in flexibility and decision-making speed due to the imposition of bureaucratic controls (Leiblein et al., 2002; Sampson, 2004), which when it is not strictly needed can also be seen as an obtrusive form of control that may offend the other party's sense of autonomy and cause inappropriate actions (Deci & Ryan, 1987; Stump & Heide, 1996). Similarly, when the second-tier relationship has been in place for a long-time and

entails high levels of trust and reduced goal conflicts, imitation would only be effective if the first-tier relationship has also been in place for a long-time. If not, an extensive control structure might be adopted in the second-tier, which might lead to excessive costs (Dyer & Singh, 1998; Wuyts & Geyskens, 2005) and, perhaps even more importantly, is likely to foster an atmosphere of distrust and may potentially damage the relationship (Das & Teng, 1998; Fryxell et al., 2002). Conversely, adopting a relatively simple control structure in a relationship that only recently has been established would be inadequate, as these typically require higher levels of monitoring and safeguarding tactics.

Thus, although we expect that MCS imitation in the supply chain is capable of improving performance, this effect will be contingent upon context similarity. In fact, when the transaction context is similar, copying MCS in the supply chain is considered to be valuable, because the MCS are likely to fit the specific context. In this case, effective control might be achieved among transaction partners, and better performance would result. By contrast, when firms are confronted with a different transaction context, imitation of MCS in the supply chain would not be appropriate, because the MCS copied would not fit the specific context. As a consequence, misalignment between control structure and transaction context would result, and the performance benefits of MCS imitation are not likely to achieved. Accordingly, we predict that the impact of imitation on second-tier relationship performance is weakened with transaction context dissimilarity between the first-tier relationship and second-tier relationship. In particular, we investigate MCS imitation and its performance implications by incorporating the three transaction context characteristics identified above. This leads to the following hypothesis:

> **H1:** The impact of MCS imitation on second-tier relationship performance weakens with (a) uncertainty dissimilarity, (b) interdependence dissimilarity, and (c) duration dissimilarity.

Altogether, we expect the relationship between MCS imitation and second-tier relationship performance to be moderated by transaction context similarity, such that MCS imitation has a positive impact on second-tier relationship performance to the degree that the transaction context is similar. From a technical standpoint, our predictions pertain to the slope of the relationship between MCS imitation and second-tier relationship performance as a function of transaction context similarity.

In this framework, we refer to imitation as similarities in use of MCS throughout the supply chain and, in line with previous research, we conceptualize MCS as combinations of outcome, behavior and social controls (Dekker, 2004; Langfield-Smith, 2008). Outcome control focuses on the measuring and monitoring of results to be achieved, regardless of the processes followed to obtain these results. Behavior control, in contrast, is to ensure that the processes are appropriate, rather than focusing on the results itself. Social controls do not specify outcome targets or desirable behaviors, but entail the alignment of goals through socialization activities. Although these various types of control are distinct in the actions or the approach required for their execution, controllers often use them in combination, creating a set of controls (Kirsch et al., 2002; Harmancioglu, 2009). This implies that MCS imitation comprises the replication of the overall set of controls. In fact, as we expect firms to use a variety of controls to make sure relationship objectives are met, the MCS imitation construct is designed to capture these different types of control by including the extent to which outcome, behavior as well as social controls are similar in the first-tier and second-tier relationship. Corresponding to the contingency approach to fit, the primary interest of this study is to examine the performance effects of the imitative use of such a combination of controls (Grabner & Moers, 2013). Specifically by considering transaction context similarities as outlined above, the purpose is to provide a better understanding of the conditions under which it is, or it is not beneficial to imitate MCS in the supply chain.

3. Sample design and data collection

The unit of analysis in this study is the vertical supply chain consisting of three members – i.e., buyer – first-tier supplier – second-tier supplier triads. In this setting, the buyer outsources production or service functions to the S1 and, in turn, the S1 outsources to the S2.[21]

[21] The data set includes transactions where the products or services exchanged between the buyer and S1 differ from those exchanged between the S1 and S2. As such, we investigated industry similarity over the supply chain triad, and looked at whether or not the S1 and the S2 shared the same SIC code at the two-digit level. A dummy variable was used for similar (same industry code) and non-similar industries (not same industry code). It appears that our sample is rather evenly distributed in terms of industry similarity, with 51 percent of the S1 and S2 firms operating in the same industry, and 49 percent operating in different industries. When including the industry similarity dummy into the regression models as a control variable, we did not find any significant effect and the results for the other variables remained unchanged. Also when industry similarity is added as a moderator of the relationship between imitation and performance, this did not turn out to be significant. Hence, the MCS do not appear to be industry specific, with the effectiveness of MCS imitation not being dependent on industry similarity.

Survey data are collected from the S1 involved in the supply chain triad. The population for our study was drawn from the database of a European association for supply chain professionals. For inclusion in our study, we chose supply chain directors, supply chain managers, and other top managers in charge of supply chain management and handling outsourcing engagements. In total, 2086 potential respondents were sent an email message with a link to the online survey.

The survey questionnaire was split into two parts. First, we asked the respondents to complete a short questionnaire in order to assess whether their companies were suitable for the study, having a collaborative relationship with both a buyer firm (representing the first-tier relationship) and a supplier firm (representing the second-tier relationship). If answered in the affirmative, the respondents were directed to the main questionnaire. They were instructed to complete the questionnaire with regard to a specific relationship with a buyer and supplier firm about whom they are knowledgeable. More specifically, to avoid selection bias but still capture exchange relationships that were salient to the respondents, they were asked to respond to the questions with respect to the most recent relationship with a buyer and supplier firm in which they were personally involved. Furthermore, since our data were collected from a single respondent, we tried to reduce common method bias by separating the measurement of predictor and criterion variables in the main questionnaire (Podsakoff et al., 2003). In fact, by constructing the survey in such a way that the respondents had to report first on aspects of the first-tier relationship, subsequently on the second-tier relationship, and finally on the similarities between the two, we interspersed the dependent between the independent variables. Following Narayanan et al. (2011), this procedure should minimize common method bias by eliminating the saliency of any contextually provided retrieval clues and diminishing the respondent's motivation to use prior responses to answer subsequent questions.

To maximize response rates, the survey questionnaire was sent again approximately two and four weeks after the initial mailing. In addition, phone calls were made to respondents who started the first part of the questionnaire but failed to complete the second part. In the end, we received 184 completed questionnaires. Informant quality was evaluated using a series of questions that assessed the informant's ability to respond to the questionnaire items, the level of involvement with the partner firms, and the knowledge of their firm's dealings with the partner firms. We excluded 14 respondents with a low score on the informant quality questions. Further, given the level of detail required in answering the questions, several

responses included missing values or were not fully completed. We eliminated 51 responses because of missing data. The final sample thus consists of 119 usable responses.[22]

Key sample characteristics are represented in Appendix 2.A. The average S1 firm in the sample has an age of 42 years. The sample covers small to large S1 firms, with number of employees varying from less than 100 to more than 1000. In terms of industry representation, the responses relate to multiple industry groups. In particular, the S1s were asked to indicate the main industry in which their firm as well as the S2s are operating. The industries were classified under two-digit SIC codes, belonging to five general industry groups, including manufacturing, transportation, wholesale and retail, finance and real estate, and services.[23]

To test for non-response bias, we compared early and late respondents on the study variables and some company demographics (Armstrong & Overton, 1977). Because of the insignificant differences ($p > 0.05$) between the responses of early and late waves of returned surveys, we can conclude that non-response bias does not appear to be a problem.

Although we tried to reduce common method bias by separating the measurement of predictor and criterion variables, we still assessed its presence by performing the Harman's single factor test using both the exploratory and confirmatory approach (Podsakoff et al., 2003). The unrotated principal component factor analysis did not result in a single factor and the first factor did not account for most of the variance (five distinct factors account for 65 percent of the variance; the first factor captured only 30 percent of the variance). Regarding the confirmatory factor analysis, the model with a single factor demonstrated a poor fit ($\chi^2(170) = 750.70$, SRMR = 0.13, CFI = 0.75, and IFI = 0.75). These results suggest that common method bias might not be a big concern. We also note that a large part of our findings are based on interactions. In that context, Siemsen et al. (2010) have indicated that common method bias can understate the significance of regression coefficients of interaction terms. Thus, the presence of significant interactions further suggests that our findings are robust to common method bias.

[22] Although our screening procedure results in a relatively low response rate (6 percent on total list of contacts), it does ensure a high reliability of the responses. That is, respondents included in the final sample are managers who (1) work for companies deemed appropriate for the study because they have collaborative relationships of the type referred to in the questionnaire; (2) are eligible for filling in the questionnaire as they are knowledgeable about the management of both their company's first-tier and second-tier relationships.

[23] About 16 percent of the S1s and 10 percent of the S2s could not be classified within the given categories and are referred to as "other."

4. Measures and validation

Scales used to measure the constructs were adopted from the available literature. For each multi-item construct, we calculated individual scores as mean scores for the combined scale items. All items were measured on a five-point scale, unless stated otherwise. An overview of the measures is provided in Appendix 2.B.

4.1 Dependent variables

Second-tier relationship performance is measured as the S1's evaluation of its relationship with the S2. This relates to perceived, rather than actual, performance, in line with previous studies that measure interfirm relationship performance. In fact, there is some consensus on buyer's assessments being a useful approach to evaluating the performance of their supplier relationships (e.g., Paulraj et al., 2008; Stouthuysen et al., 2012). While some scholars note that subjective performance evaluations may be overstated, it has also been argued that evaluations based on multiple indicators give a more reliable proxy for performance (e.g., Kale & Singh, 2007; Lunnan & Haugland, 2008). The measure in this study particularly refers to the extent to which the S2 is performing relative to the S1's expectations on a variety of dimensions. Although performance involves many aspects (e.g., Ferguson et al., 2005; Johnston et al., 2004), we focus on its operational dimensions because of its salience in a supply chain context (e.g., Cousins et al., 2008; Kumar et al., 2011). More specifically, we use an operational measure of performance relating to key relationship outcomes, including quality, delivery, responsiveness, sales, and/or technical support, and cost. The measurement of this construct (five items) is based amongst others on Chen and Paulraj (2004), Mahama (2006), Prahinski and Benton (2004), and Wu et al. (2010). By taking the average response on those key dimensions, we obtain a measure reflecting overall relationship performance. Because the various dimensions do not per se have a common underlying meaning, this construct is treated as a formative scale.

4.2 Independent variables

To measure MCS imitation, the S1s were asked to indicate the extent to which they consider the controls they are using with their suppliers as similar to those the buyer used towards them.[24] In particular, three types of control are included: outcome (two items), behavior (two items), and social (two items) controls. Outcome control imitation indicates whether the supplier employs similar outcome controls as those used by the buyer. Behavior control imitation refers to the supplier using similar behavior controls as the buyer did. Social control imitation relates to social controls being used by the supplier just like in the relationship with the buyer. Together, these measures capture the degree to which the supplier controls its supplier relationships in a similar way as the buyer did. As a consequence, we model overall MCS imitation as a second-order composite latent variable, composed of the three first-order imitation measures. The MCS imitation construct is also treated as a formative construct. We thus asses MCS imitation using an index of indicators, where each indicator reflects a single aspect of the higher-order construct. An average score across the three dimensions is used in the analysis.

In a similar vein, we examine transaction context similarity by asking the S1s to indicate the extent to which they consider the transaction context of the relationship between their firm and the buyer to be similar to the transaction context of the relationship between their firm and the supplier. In this regard, three elements of the transaction context are considered: uncertainty, interdependence, and duration of the relationship (one item each). Uncertainty similarity refers to the extent to which the level of uncertainty in the market is similar in both relationships. Interdependence similarity is seen as the extent to which the degree of interdependence between the partner firms is similar in both relationships. Duration similarity indicates whether the number of years the partner firms have been working together is similar in both relationships. The model is tested by incorporating each of these three context similarity factors.

[24] We also used validation questions to gain assurance that the variable is behaving plausibly, and that the similarity in MCS indeed stems from imitation. In particular, we included an alternative measure of MCS imitation, which asked the S1s to indicate the extent to which their firm got the inspiration for the MCS they are using with their suppliers from the buyer firm. This measure reflects in a direct way whether MCS that the buyer uses with the S1 result in imitative MCS usage by the S1 with the S2. As our main measure is highly correlated with this alternative measure of MCS imitation ($r = 0.73$, $p < 0.01$), this raises confidence that it captures upstream MCS imitation in the supply chain. In addition, to gauge that this imitation relates to learning processes, we also asked the S1 to indicate whether they agree with the statement that their firm learned a lot from the buyer about the design of MCS. Again, we find a significant positive correlation with our main measure of MCS imitation ($r = 0.56$, $p < 0.01$), providing confidence that our construct is behaving as expected.

4.3 Control variables

A number of control variables are included to account for alternative influences on interfirm relationship performance, in line with previous literature (e.g., Cannon et al., 2000; Carey et al., 2011; Palmatier et al., 2007; Kumar et al., 2011). Specifically, given our interest in second-tier relationship performance, we accounted for elements of the second-tier relationship that might affect its performance. First, we controlled for uncertainty, which relates to unpredictability of relevant aspects surrounding the transaction between the S1 and the S2 and is measured on a multi-item scale (four items), based on Wuyts and Geyskens (2005) and Zaheer et al. (1998). Uncertainty is an important attribute of the market in which products/services are transacted, and high levels potentially make the achievement of certain relationship outcomes more difficult. Second, we controlled for the degree of interdependence, reflecting the dependence of the S1 and S2 on each other and is measured on a multi-item scale (two items), based on Lusch and Brown (1996) and Li et al. (2010). Partners' interdependence usually affects performance positively, because partners work to maintain their relationship and avoid destructive actions. Third, we controlled for the duration of the relationship, operationalized as the number of years that the S1 and S2 have been working together. The length of a relationship has been suggested to influence performance, with more enduring relationships reflecting higher performing participants. Finally, we accounted for firm-level characteristics, such as S1's firm age and size. Firm age is measured in number of years since the foundation of the firm. Firm size is included as a dummy variable with number of employees less than or equal to 500 or number of employees larger than 500.

4.4 Measurement validation

With regard to measurement validation, multi-item measures were subjected to a systematic assessment of unidimensionality, reliability and validity. Given that the final MCS imitation construct and second-tier relationship performance construct were operationalized as formative, using an index of indicators, conventional techniques are not appropriate for assessing their reliability and validity (Diamantopoulos & Winklhofer, 2001). Instead, we assess the reliability and validity of the formative constructs, by following the guidelines of Diamantopoulos et al. (2008) and Petter et al. (2007). In particular, to ensure that multicollinearity is not present, we examine the variance inflation factors (VIF). We find that all VIFs have values below 3.3, indicating that the measurement indicators are not too highly

correlated and multicollinearity is not a concern. Further, validity can be assessed through the consideration of the significance of regression weights, since they represent the contribution of the indicator to the construct. As we find the indicators all to be significant, this confirms that they are valid indicators of the formative constructs.

For the other, reflective measures, the item sets were subjected to confirmatory factor analysis using LISREL 8.8 (Jöreskog & Sörbom, 1996). Because of the large number of indicators and constructs, and the limitation on sample size, different confirmatory factor models were estimated according to Bentler and Chou (1987). That is, we divided the multi-item constructs into theoretically plausible groups and ran separate models for these groups. Model 1 included the control imitation measures (outcome control imitation, behavior control imitation, social control imitation) and Model 2 included the remaining measures (uncertainty and interdependence). To evaluate model fit, we used multiple fit criteria as recommended by Hu and Bentler (1999). The results show a good fit for both Model 1 ($\chi^2(6) = 21.05$, SRMR = 0.04, CFI = 0.97, and IFI = 0.97) and Model 2 ($\chi^2(8) = 13.28$, SRMR = 0.05, CFI = 0.98, and IFI = 0.98). This provides evidence for unidimensionality.

We then assessed the scale reliabilities on the basis of Cronbach's alpha (Cronbach, 1951), composite construct reliability and average variance extracted (Fornell & Larcker, 1981). The results met the recommended criteria, and demonstrate internal consistency of the constructs. To test convergent validity, we inspected the parameter estimates and their corresponding t-values (Anderson & Gerbing, 1988). The results show that all the indicators are significantly related to their underlying theoretical constructs and, hence, exhibit convergent validity. We used several methods to test discriminant validity. First, we compared for each construct the average variance extracted with the shared variance with any other construct (Fornell & Larcker, 1981), and found that the average variance extracted of the construct was always greater than the highest shared variance with other constructs. Second, we performed paired construct tests for every possible pairing in our study (Anderson & Gerbing, 1988), resulting in significant differences in chi-square values for the constrained and unconstrained solutions. Together, this supports discriminant validity between the constructs. Overall, the results demonstrate that our measurement scales are reliable and valid.

5. Results

Table 2.1 reports correlations and summary statistics for all variables used in the model. To test our hypothesis, we used ordinary least square (OLS) regression modeling with second-tier relationship performance as a function of MCS imitation, transaction context similarity, and their interaction. After only including the control variables (model 1), we subsequently entered the direct effects (model 2), and the interaction terms (model 3) (Aiken & West, 1991). The variables were mean-centered in order to reduce potential problems of multicollinearity. Examination of the variance inflation factors associated with each regression coefficient shows values well below 5 and suggests that multicollinearity is not a problem (Hair et al., 1998).

As shown in Table 2.2, the results indicate that MCS imitation has a significant direct effect on second-tier relationship performance ($\beta = 0.25$, $p < 0.05$). Our hypotheses, however, suggest that the performance effects of MCS imitation weaken with dissimilarities in the transaction context. Statistically, this is represented by a positive interaction term between MCS imitation and transaction context similarity. That is, we expect MCS imitation to positively influence performance when the transaction context is similar, with this effect becoming weaker when the transaction context is dissimilar. As Table 2.2 shows, we find a significant positive interaction coefficient for uncertainty similarity ($\beta = 0.18$, $p < 0.10$) and duration similarity ($\beta = 0.19$, $p < 0.10$). This finding is in line with H1a and H1c, and confirms that the impact of MCS imitation on second-tier relationship performance actually depends on the level of similarity in transaction context factors such as uncertainty and duration. For interdependence similarity, however, we do not find such effect. As such, H1b is not supported.

Table 2.1: Correlation matrix and summary statistics

Construct	1	2	3	4	5	6	7	8	9	10	11	12	13
1. MCS imitation													
2. Outcome control imitation	0.879**												
3. Behavior control imitation	0.871**	0.711**											
4. Social control imitation	0.804**	0.540**	0.511**										
5. Uncertainty similarity	0.393**	0.345**	0.366**	0.292**									
6. Interdependence similarity	0.438**	0.377**	0.374**	0.367**	0.315**								
7. Duration similarity	0.365**	0.417**	0.308**	0.209*	0.279**	0.364**							
8. Performance	0.361**	0.320**	0.301**	0.301**	0.218*	0.239**	0.382**						
9. Uncertainty	0.311**	0.221*	0.258**	0.314**	0.473**	0.321**	0.101	0.051					
10. Interdependence	0.376**	0.318**	0.240**	0.402**	0.205*	0.208*	0.138	0.126	0.294**				
11. Duration	-0.012	0.025	-0.034	-0.022	-0.040	0.106	0.017	-0.056	-0.013	0.111			
12. Age S1	-0.097	-0.134	-0.020	-0.095	-0.169	-0.119	-0.069	-0.116	-0.040	-0.115	0.106		
13. Size S1	0.125	0.099	0.078	0.140	-0.089	-0.061	-0.017	-0.168	0.038	-0.073	0.071	0.497**	
M	3.31	3.35	3.32	3.27	3.29	3.43	3.45	3.86	2.87	3.68	10.41	42.25	0.40
SD	0.80	0.93	0.95	0.95	0.96	0.93	0.96	0.63	0.82	0.83	8.61	39.86	0.49

* $p < 0.05$; ** $p < 0.01$ (two-tailed)
M = mean; SD = standard deviation.

Table 2.2: Relation between MCS imitation and performance

	Model 1		Model 2		Model 3	
Control variables						
Uncertainty	0.055	(0.075)	-0.077	(0.080)	-0.166	(0.081)
Interdependence	0.113	(0.076)	0.000	(0.074)	-0.007	(0.072)
Duration	-0.050	(0.007)	-0.051	(0.006)	-0.078	(0.006)
Age S1	-0.080	(0.002)	-0.006	(0.002)	0.002	(0.002)
Size S1	-0.042	(0.134)	-0.110	(0.128)	-0.095	(0.129)
Main effects						
MCS imitation			0.252*	(0.088)	0.250*	(0.088)
Uncertainty similarity			0.094	(0.069)	0.131	(0.070)
Interdependence similarity			0.020	(0.071)	-0.001	(0.080)
Duration similarity			0.258**	(0.063)	0.269**	(0.063)
Interaction effects						
MCS imitation x Uncertainty similarity					0.175†	(0.086)
MCS imitation x Interdependence similarity					-0.019	(0.092)
MCS imitation x Duration similarity					0.185†	(0.069)
Model Fit						
R^2	0.04		0.22		0.29	
F-value	0.81		3.18**		3.34***	
ΔR^2			0.18		0.07	
Δ F-value			5.95***		3.23*	

Standardized coefficients are reported; Standard errors are given in parentheses.
† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (two-tailed)

In order to better understand the precise effects for uncertainty similarity and duration similarity, we plotted the interactions. Plots were made for one standard deviation above and below the mean. The above-mean value was taken as high similarity, whereas the below-mean value was taken as low similarity. Figures 2.1 and 2.2 illustrate a more positive relationship between MCS imitation and second-tier relationship performance in case of high uncertainty similarity compared to low uncertainty similarity, and in case of high duration similarity compared to low duration similarity. We also tested simple slopes of the regression lines. Specifically, the simple slope for MCS imitation for high uncertainty similarity is significantly different from zero ($t = 2.77$, $p < 0.01$), but is insignificant for low uncertainty similarity ($t = 0.40$, $p = 0.69$). Likewise, the simple slope for MCS imitation for high duration similarity is significantly different from zero ($t = 2.83$, $p < 0.01$), while for low duration similarity it is insignificant ($t = 0.57$, $p = 0.57$). Overall, these results confirm that the positive performance effect, which is observed when the transaction context is similar, weakens substantially when the transaction context is dissimilar, as evidenced by an insignificant slope in the latter case.

Figure 2.1: Plotted interaction of uncertainty similarity and MCS imitation

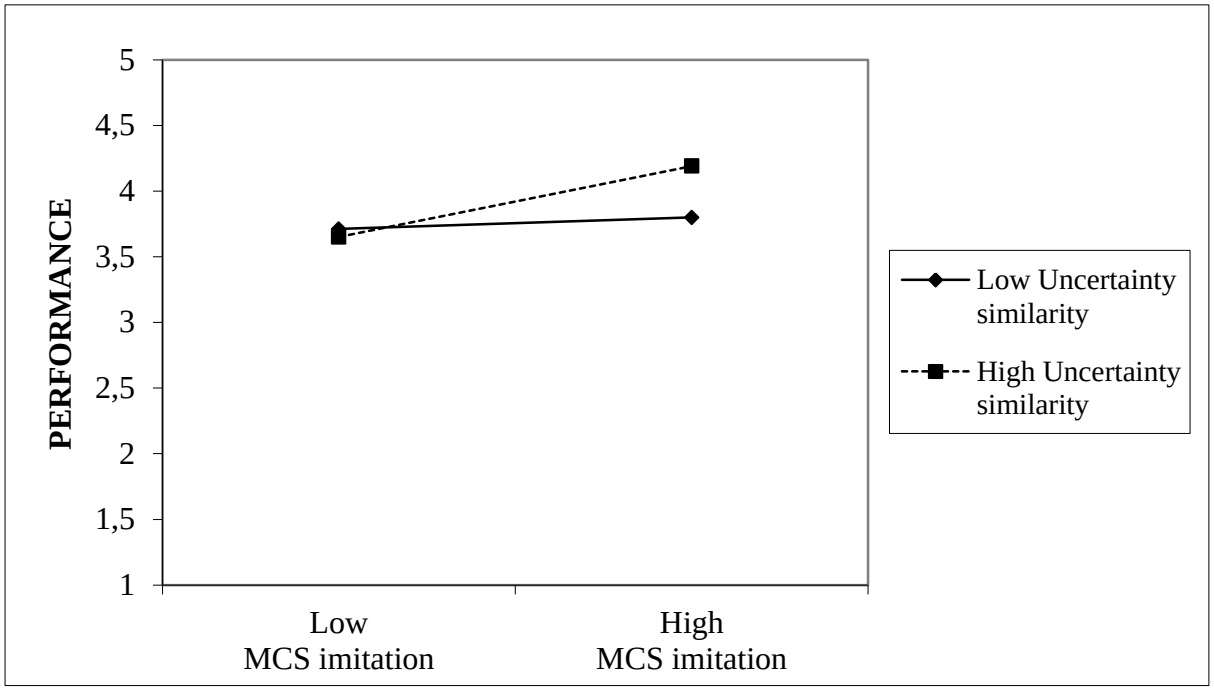
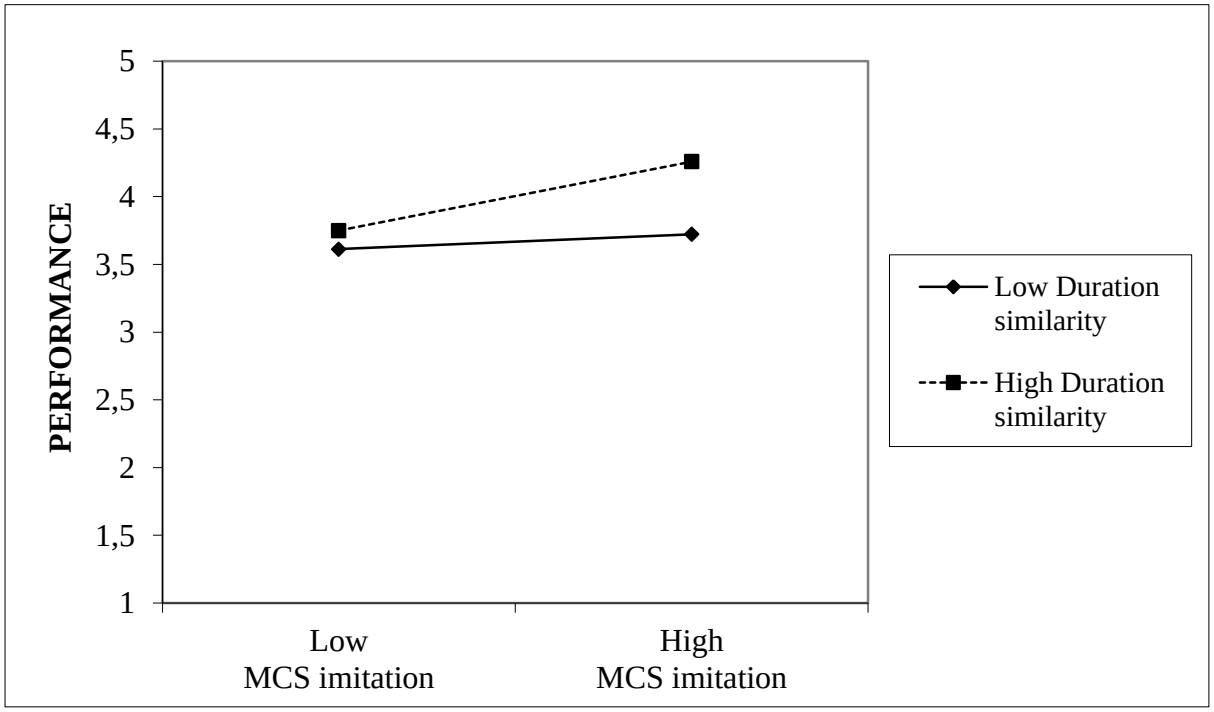


Figure 2.2: Plotted interaction of duration similarity and MCS imitation



Since MCS imitation is composed of a portfolio of controls, we performed additional analyses to gain more detailed insights into the associations between second-tier relationship performance, transaction context similarity, and the different types of control that underlie the general MCS imitation construct. Specifically, we repeated the above analyses for outcome control imitation, behavior control imitation, and social control imitation.[25] The results are presented in Table 2.3, 2.4, and 2.5 respectively. As shown, the importance of uncertainty similarity and duration similarity for performance differs, depending on the different types of control under consideration. The moderating effect of interdependence similarity, again, was not found to be significant for any of the control types.

Table 2.3: Relation between outcome control imitation and performance

	Model 1		**Model 2**		**Model 3**	
Control variables						
Uncertainty	0.055	(0.075)	-0.063	(0.081)	-0.121	(0.084)
Interdependence	0.113	(0.076)	0.036	(0.074)	0.030	(0.073)
Duration	-0.050	(0.007)	-0.064	(0.007)	-0.072	(0.006)
Age S1	-0.080	(0.002)	-0.007	(0.002)	-0.019	(0.002)
Size S1	-0.042	(0.134)	-0.083	(0.130)	-0.056	(0.130)
Main effects						
Outcome control imitation			0.138	(0.075)	0.171	(0.077)
Uncertainty similarity			0.118	(0.069)	0.105	(0.070)
Interdependence similarity			0.062	(0.071)	0.083	(0.074)
Duration similarity			0.265*	(0.065)	0.281**	(0.064)
Interaction effects						
Outcome control imitation x Uncertainty similarity					0.022	(0.070)
Outcome control imitation x Interdependence similarity					0.072	(0.072)
Outcome control imitation x Duration similarity					0.203*	(0.062)
Model Fit						
R^2	0.04		0.19		0.25	
F-value	0.81		2.71**		2.70**	
ΔR^2			0.16		0.05	
Δ F-value			4.94**		2.36†	

Standardized coefficients are reported; Standard errors are given in parentheses.
† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (two-tailed)

[25] We also estimated a model in which outcome control imitation, behavior control imitation, and social control imitation are included together as predictor variables. In this model, in order to incorporate the way in which these three types of control are related to each other, we used multiple regression with factor score estimates as composite measures of the control types. This yields similar results and conclusions as those reported.

Table 2.4: Relation between behavior control imitation and performance

	Model 1		Model 2		Model 3	
Control variables						
Uncertainty	0.055	(0.075)	-0.066	(0.080)	-0.141	(0.079)
Interdependence	0.113	(0.076)	0.043	(0.072)	0.065	(0.070)
Duration	-0.050	(0.007)	-0.052	(0.006)	-0.050	(0.006)
Age S1	-0.080	(0.002)	-0.031	(0.002)	-0.024	(0.002)
Size S1	-0.042	(0.134)	-0.074	(0.126)	-0.084	(0.125)
Main effects						
Behavior control imitation			0.173†	(0.067)	0.193†	(0.065)
Uncertainty similarity			0.104	(0.069)	0.167	(0.069)
Interdependence similarity			0.044	(0.071)	-0.039	(0.075)
Duration similarity			0.275**	(0.063)	0.296**	(0.064)
Interaction effects						
Behavior control imitation x Uncertainty similarity					0.236*	(0.069)
Behavior control imitation x Interdependence similarity					-0.100	(0.073)
Behavior control imitation x Duration similarity					0.155	(0.055)
Model Fit						
R^2	0.04		0.20		0.28	
F-value	0.81		2.88**		3.27**	
ΔR^2			0.17		0.08	
Δ F-value			5.31**		3.73*	

Standardized coefficients are reported; Standard errors are given in parentheses.
† p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.001 (two-tailed)

Table 2.5: Relation between social control imitation and performance

	Model 1		Model 2		Model 3	
Control variables						
Uncertainty	0.055	(0.075)	-0.086	(0.080)	-0.161	(0.081)
Interdependence	0.113	(0.076)	-0.014	(0.075)	-0.068	(0.076)
Duration	-0.050	(0.007)	-0.048	(0.006)	-0.077	(0.006)
Age S1	-0.080	(0.002)	-0.007	(0.002)	-0.004	(0.002)
Size S1	-0.042	(0.134)	-0.102	(0.127)	-0.072	(0.126)
Main effects						
Social control imitation			0.246*	(0.069)	0.205†	(0.069)
Uncertainty similarity			0.121	(0.067)	0.134	(0.070)
Interdependence similarity			0.021	(0.071)	0.115	(0.078)
Duration similarity			0.290**	(0.062)	0.259**	(0.064)
Interaction effects						
Social control imitation x Uncertainty similarity					0.143	(0.069)
Social control imitation x Interdependence similarity					0.163	(0.071)
Social control imitation x Duration similarity					0.046	(0.063)
Model Fit						
R^2	0.04		0.22		0.28	
F-value	0.81		3.22**		3.17**	
ΔR^2			0.18		0.06	
Δ F-value			6.05***		2.56†	

Standardized coefficients are reported; Standard errors are given in parentheses.
† p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.001 (two-tailed)

The results specifically reveal that uncertainty similarity has a significant positive moderating effect on performance for imitation of behavior controls ($\beta = 0.24$, $p < 0.05$), but that this effect is insignificant for imitation of outcome and social controls. This suggests that the impact of behavior control imitation, in particular, depends on similarities in the level of uncertainty. The interaction plot in Figure 2.3 accordingly displays a more positive relationship between behavior control imitation and second-tier relationship performance in case of high uncertainty similarity compared to low uncertainty similarity. In particular, the simple slope for behavior control imitation for high uncertainty similarity is significantly different from zero ($t = 3.06$, $p < 0.01$), while being insignificant for low uncertainty similarity ($t = -0.40$, $p = 0.69$).

The results further show that the moderating effect of duration similarity on performance is positive and significant for imitation of outcome controls ($\beta = 0.20$, $p < 0.05$), but insignificant for imitation of behavior and social controls. This indicates that the impact of outcome control imitation is especially affected by duration similarity. The interaction plot in Figure 2.4 supports this by showing a more positive relationship between outcome control imitation and second-tier relationship performance in case of high duration similarity compared to low duration similarity. In particular, the simple slope for outcome control imitation for high duration similarity is significantly different from zero ($t = 2.21$, $p < 0.05$), but for low duration similarity it is insignificant ($t = -0.09$, $p = 0.93$).

Figure 2.3: Plotted interaction of uncertainty similarity and behavior control imitation

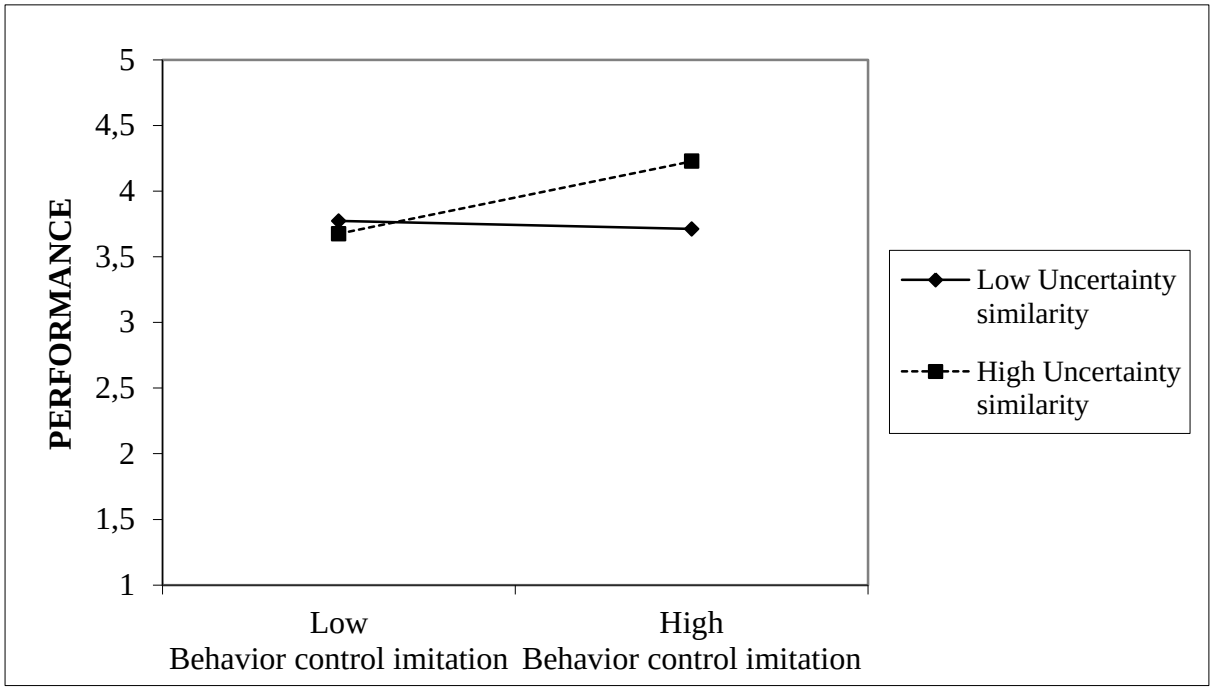
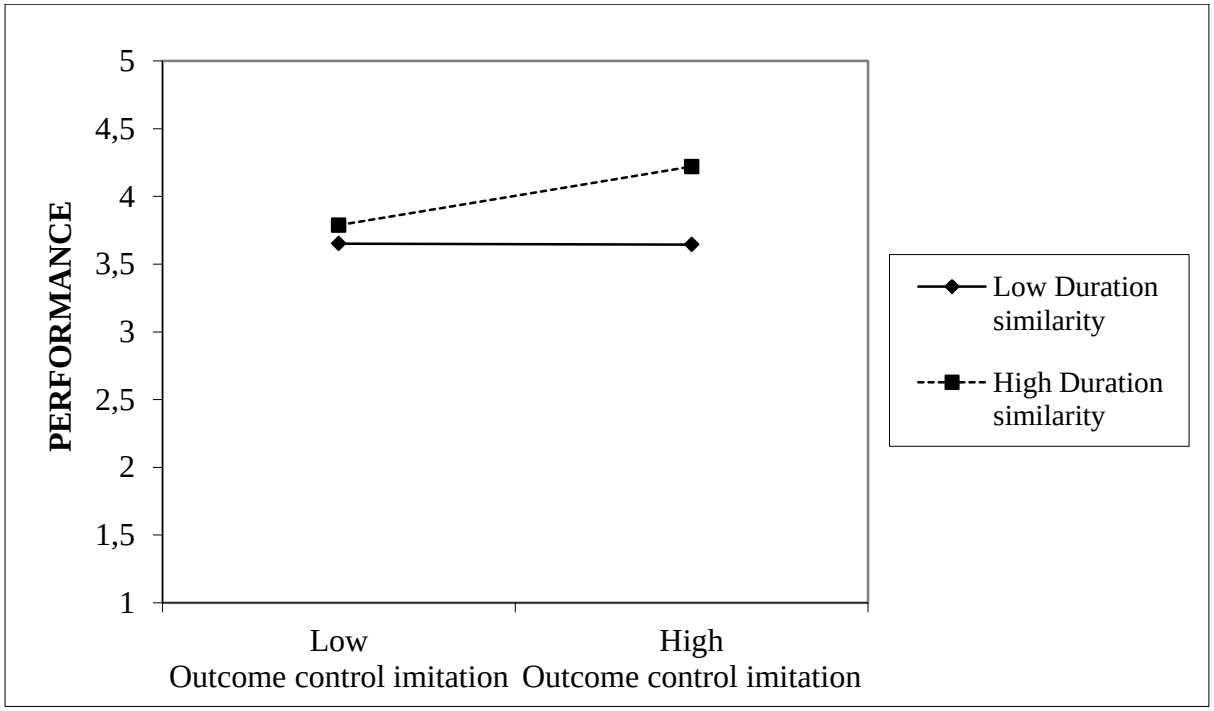


Figure 2.4: Plotted interaction of duration similarity and outcome control imitation



Altogether, based on these results, we can conclude that MCS imitation can have a positive impact on performance, at least when it is in accordance with critical characteristics of the transaction context. While this is in line with our expectations, building on the premise that MCS imitation has the potential to improve performance in the second-tier relationship, it must be noted that this is under the assumption that successful MCS are being imitated. In order to test for this, we looked at performance in the first-tier relationship, as this may reflect the degree to which the used MCS turned out to be successful. In particular, we asked the S1s to evaluate their overall working relationship with the buyer firm, specifically by indicating whether the exchange activities were both effective and efficient.[26] Following the outcome-based approach to imitation, we then assessed the impact of this perceived performance in the first-tier on the propensity to imitate. We first examined the bivariate correlation between the two variables, showing a positive association between first-tier relationship performance and MCS imitation ($r = 0.44$; $p < 0.01$). We also compared the means of MCS imitation for the subsamples with high ($n = 69$) and low ($n = 50$) levels of first-tier relationship performance. The results demonstrate that those who perceive performance to be high engage in MCS imitation to a significantly greater extent than those who perceive performance to be low ($t = 3.72$; $p < 0.01$). This provides support for the existence of outcome-based imitation, where S1s generally place high importance on outcome indicators when deciding to imitate. This also signals the relevance of willful imitation, as the S1s appear to concretely decide to imitate those practices that are deemed to be worthy or valuable to imitate. Indeed, such patterns would not be evident if the MCS choices are, for example, firm responses to coercive pressures from the buyer, forcing them to adopt specific practices in the supply chain. In that case, the S1 would have no other choice but to implement the MCS imposed by the buyer in their relationship with the S2. Our pattern of results is consist with imitation effects, where the S1 assesses the MCS used by the buyer against the overall performance of their relationship and imitate the use of these MCS if this appears to have resulted in success.

[26] A three-item, five-point Likert scale was used to measure the overall performance level between the buyer and the S1, as reported by the S1, based on the work of Boyle and Dwyer (1995) and Ren et al. (2010): (1) There is an efficient working relationship between my firm and this buyer; (2) Coordination is easily accomplished with this buyer firm; (3) Any planning or exchange between my firm and this buyer is completed successfully ($\alpha = 0.80$).

Importantly, given that the S1s are imitating the buyer's use of MCS towards the S2s when first-tier relationship performance is perceived to be high, this allows for performance gains in the second-tier relationship to result.[27] The potential gains of MCS imitation in the supply chain, however, may not be achieved, to the degree that the relevant parties are subject to different exchange conditions, creating mismatches between control structure and transaction context. In other words, although MCS imitation is found to be rather selective in the sense that MCS are more likely to be imitated if they have proven to be useful tools in the first-tier relationship, this does not automatically imply that these MCS are also effective in the second-tier relationship, but is contingent upon similarity in the transaction context between the first-tier and second-tier relationship.

6. Discussion and conclusion

This study investigates MCS imitation and its performance implications in a supply chain triad. While our findings show that firms, when designing their MCS, often imitate MCS practices that are perceived to be successful in relationships with other network partners, firms also need to pay attention to whether the transaction context of the different relationships match. Specifically, we find that dissimilarities in the level of uncertainty and duration of the first-tier and second-tier relationships weaken the association between MCS imitation and performance.

With regard to uncertainty, this observation reinforces the notion that MCS imitation under dissimilar environmental conditions is less effective. As shown in our additional analyses, this turns out to be particularly the case for imitation of behavior controls, suggesting that the proper extent of reliance on behavior controls depends on the level of uncertainty that needs to be managed. Take for example the situation where the environment in the second-tier is characterized by *low* uncertainty, whereas the environment in the first-tier is characterized by *high* uncertainty. In this case, S1's imitating behavior would result in misalignment as this may cause him to develop an elaborate control structure, such as explicitly prescribing rules and procedures and closely observing the supplier's behaviors, to

[27] Since performance in the first-tier can be considered as another critical condition for MCS to be successfully imitated in the second-tier relationship, we also re-estimated the model including this as an additional interaction (i.e., three-way interaction between MCS imitation, transaction context similarity, and first-tier relationship performance). However, no significant three-way interaction was found, which could be explained by the fact that most S1s copy the actions of the buyer towards the S2 if performance in the first-tier is considered to be high. That is to say, because the link from perceived first-tier relationship performance to MCS imitation yields strong results, there might be insufficient variation in the sample to find significant interaction effects regarding the impact of MCS imitation.

manage environmental uncertainty, when a less complex control structure would suffice (Harmancioglu, 2009; Langfield-Smith, 2008). In other words, the firm is likely to implement rather costly behavior controls, involving high levels of supervision and complex methods for evaluating performance, while this may not be needed when the environment is not that uncertain. Furthermore, because behavior controls impose strict guidelines on which activities are to be performed and how they should be performed, when they are not really necessary, their use may be perceived as intrusive, such that it may produce retaliatory, opportunistic actions (Deci & Ryan, 1987; Heide et al., 2007). Another situation occurs when the second-tier is characterized by *high* uncertainty, whereas the first-tier is characterized by *low* uncertainty. When the S1, in this case, imitates misalignment would result from installing a relatively simple control structure, while actually a more complex control structure, with a high focus on monitoring behaviors, may be required to deal with unanticipated contingencies that might arise (Dekker, 2004; de Mortanges & Vossen, 1999). Thus, while in the first case the firm adopts a costly control structure when the threat of uncertainty is relatively low, the opposite occurs in the second case as inadequate control is developed given the presence of high uncertainty (Reuer & Ariño, 2002; Sampson, 2004). These different situations indicate that greater imitative use of MCS is not always associated with better performance, but that this relationship is contingent upon uncertainty similarity.

A similar reasoning goes for duration of the relationship, as the suitability of MCS imitation also depends on the duration of the respective relationships. The additional analysis indicates that this mainly applies to imitation of outcomes controls, and underscores the importance of adapting the use of outcome controls to the length of cooperation. Our study suggests, for example, that when the second-tier relationship is characterized by *low* duration and the first-tier relationship is characterized by *high* duration, imitation would be less appropriate. One reason for this could be that long-term relationships are typically associated with more familiarity from prior experiences and trust between the partners, which may enable them to work closely together without the need for more costly formal controls (Dekker, 2004; Inkpen & Currall, 2004). If then the S1 tries to install a similar control structure with a partner that he barely knows in the second-tier, this may lead to misalignment as closely monitoring performance through the use of outcome controls may be required in early stages of the relationship (Choudhury & Sabherwal, 2003; Langfield-Smith, 2008). The opposite would hold when the second-tier relationship is characterized by *high* duration, but the first-tier relationship is characterized by *low* duration. In this case, imitation by the S1

may lead to misalignment with the longer duration, because if trust between partners is sufficiently strong to ensure cooperation, a high reliance on outcome controls that require the specification of clear goals and corresponding incentives would lead to unnecessary and thus costly levels of formality (Dyer & Singh, 1998; Li et al., 2010). Moreover, as the relationship duration increases, excessive control may undermine the mutual trust between partners and potentially damage the relationship (Das & Teng, 2001; Yang et al., 2011). This is because when outcomes need to be frequently checked against pre-set measures, this may signal distrust, enhancing the other party's psychological reaction and thereby promoting undesired actions such as opportunistic behaviors. In addition, since outcomes are constantly and closely monitored, this may give partner firms little leeway in pursuing long-term objectives at the cost of certain short-term targets, which is likely to be inappropriate in relationships featured by a long run perspective. Therefore, when relationship duration is high, one should also be aware of potential dysfunctional effects of exercising control. Together, these arguments suggest that greater imitative use of MCS does not always result in better performance, but that this relationship is contingent upon duration similarity.

Our findings did not provide support for the predicted positive effect of interdependence similarity on the performance impact of MCS imitation. The lack of such finding appears to be due to the fact that most S1s are responsive to interdependence similarities when imitating MCS. In an additional analysis on the relationship between interdependence similarity and the occurrence of imitation, we indeed found this to be the case. More specifically, in order to provide more insight into how firms differ in responses to similar conditions, we divided the sample into two groups. The first group included firms with low second-tier performance, whereas the second group included those with high second-tier performance. When we look at the association between interdependence similarity and the occurrence of imitation, the results indicate that this is positively significant for both groups. In general, this indicates that firms take similarities in the degree of interdependence into account, such that the control structure tends to be appropriately aligned with the transaction context and, hence, misalignment does not result from imitation.

Altogether, this study enriches our understanding of how the cognition of context factors may exert influences on the use of MCS and thereby affect performance. Specifically regarding imitative behavior, we find that similarities in the level of uncertainty and duration of the relationship are important elements to consider. In particular, our findings show that outcome-based MCS imitation in the supply chain will only be effective under the same

environmental conditions, and when the length of cooperation is similar. These results complement previous studies suggesting that the tailoring needed to implement MCS under these contingencies is substantial. This makes a particular set of controls appropriate for managing relationships in one context, but not necessarily in another, given contextual mismatches. Therefore, designers of MCS should not be seeking gains from blind imitation, but should consider adapting the MCS to meet the specific relationship needs as prompted by factors such as uncertainty and duration.

The evidence that firms, nevertheless, sometimes pursue mimetic actions despite the possibly resulting mismatch is consistent with some earlier theoretical developments. In general, MCS design is thought to be based on the process of *matching*. Organizations adopt particular MCS because they align with the transaction context, such that an optimal result can be achieved. However, while this notion of alignment is widely accepted, an organization's control structure and transaction context may often be out of alignment (Geyskens et al., 2006). Our study demonstrates that this may be attributed to the managerial process of *imitating*. It appears that organizations sometimes imitate particular MCS, regardless of any connections to the specific transaction context. Roberts and Greenwood (1997) in this regard suggest that this does not imply that managers do not care about efficiency or performance goals. Rather, the adoption of organizational practices may be viewed as efficiency seeking, under certain cognitive constraints, instead of efficiency optimizing. That is, as boundedly rational decision-makers, they may be motivated to look around and imitate the decisions or actions of others. It is has been pointed out, though, that decision-makers conduct more-or-less limited searches and look for satisficing rather than optimizing solutions. These principles in itself, may then be understood to limit successful imitation (Posen et al., 2013). In fact, organizations may simply imitate practices they believe have been beneficial elsewhere, without reflecting on the context in which these practices are used. In our study, this provides an explanation for the fact that MCS are being imitated even when certain elements of the transaction context are not similar. Following this reasoning, it is then not surprising that MCS choices may not always be "in fit" with the transaction context. Thus, in line with arguments raised by Argyres and Liebeskind (1999), the control of a given transaction may, in many cases, not be based solely on the characteristics of the specific transaction context. Instead, because of the imitation processes outlined above, the transaction may be controlled in ways that are suboptimal if the transaction context alone would be considered.

Consequently, with regard to the performance implications of MCS imitation, we propose that *how* imitation takes place, plays a pivotal role in explaining the effectiveness of the copied MCS. That is, imitation of MCS may take place in a *noncomparative* or a *comparative* mode. Noncomparative imitation of MCS are imitations made in absence of a comparison point. Then, the S1 imitates the MCS the buyer uses with him without evaluating whether a match between the environmental and relationship characteristics of the first-tier and second-tier relationship exists. Comparative MCS imitation, in contrast, refers to imitations in the presence of a comparison point. In this case, the imitated MCS are evaluated by the S1 against a match between first-tier and second-tier environmental and relationship characteristics. It are these evaluation modes that influence the effectiveness of MCS imitation throughout the supply chain. Firms who better understand the different transaction contexts across the supply chain will likely benefit more from MCS imitation.

This study contributes to previous literature in several ways. We contribute to the accounting literature by integrating insights from both economic and social perspectives. We believe that, since economic exchanges are always embedded in a broader social context, a theoretical perspective that accounts for social influences, rather than one that applies an economically rational perspective alone, is critical for a more complete understanding. Existing studies on MCS design in the supply chain mainly provide an explanation on how MCS are installed as a function of the specific transaction context. Such focus, however, does not include examining the broader social context in which firms are embedded. Our contention in this study is that the behavior and performance of firms can be more fully understood by examining the network of relationships in which they can be placed. Specifically, although a dyadic approach on MCS design has its contributions, our triadic approach helps us to capture the broader picture. By considering a triadic network configuration, we can investigate social influences on MCS usage, and especially how MCS become imitated in the supply chain. We further contribute to the literature on interorganizational imitation by investigating the effectiveness of such behavior. Although many studies have examined the processes through which imitation may unfold, there is little evidence on its performance implications. With this study, we add to the discussion of the value of imitation, by illuminating the conditions under which MCS imitation is a reasonable strategy in the sense that it would lead to performance improvements.

This study also contributes to practice. Being part of a supply chain network, firms must capture the effects of their control decisions made in relation to their direct partners and be

able to extend this to determine how the decisions affect the connected business relationships with other firms. In particular, this study points out that the buyer's control efforts in the first-tier relationship, through imitation by the supplier, may lead to performance improvements in the second-tier relationship. Crucially, though, this study also shows that the impact of such imitation varies sharply with the level of similarity in the transaction context between the first-tier and second-tier relationship. While firms may be inclined to use similar MCS throughout the supply chain, the exchange conditions may not be similar for each relationship. We illustrate that imitation should not be a context-independent choice. It appears, however, that this may not always be well understood. Our results show that managers may engage in imitation when designing their MCS, possibly resulting in a mismatch between control structure and transaction context. Although imitating successful MCS can positively affect performance, the effect will depend on the capacity of the imitator to take into account the transaction context. In other words, this study points out that successful imitation requires decision-makers to recognize the importance of context similarity. Managers should be aware that every cooperation is different and that things may go wrong when imitating practices from other firms without questioning their applicability in the specific context. A better understanding of these imitation effects should help managers to use more effective MCS that have the potential to enhance performance in their interfirm exchanges.

We recognize that our study is characterized by certain limitations, which suggest directions for further research. First, this study focused on supply chain relationships. The extent to which our findings are generalizable to other types of relationships remains to be studied. Second, although the unit of analysis is the vertical supply chain consisting of three members, we were able to collect data from the S1s only. In order to have a more complete view of the relationships, it would be better to collect data from all involved parties in the network. Third, the present study examined MCS imitation moving upstream in the supply chain. Future research is needed to explore possible downstream influences. Fourth, this study uses a rather general measure of MCS imitation. A more detailed picture of the extent to which the control types are actually used in both the first-tier relationship and second-tier relationship would provide additional insights. Future research could also benefit from a more elaborate measure of transaction context similarity. In this study, three elements of the transaction context are included. Also other factors, however, may constitute the transaction context and may influence MCS design. In addition, future research may examine other

contingencies besides transaction context similarity that may shape the benefits of MCS imitation. For example, scholars have indicated that differences in cultural context can have implications on a firm's choice of MCS. Therefore, the degree to which an identical set of controls implemented by different firms leads to similar results may also be dependent on the cultural context in which the transactions take place. Regarding our measure of effectiveness, we looked at perceived performance based on multiple dimensions, like commonly done in the literature. Nevertheless, future research could expand the present model by also taking objective measures of performance into account, as to provide more insight into the costs of misaligned governance. Finally, it is important to recognize that imitation may occur for various reasons. Our results show that MCS imitation has the potential to generate economic benefits, at least to some extent. Our study, however, did not include social benefits in the model. Future research may wish to include both social and economic benefits in order to examine the overall influence of MCS imitation.

In conclusion, we believe this study offers interesting insights. The results suggest that governance studies need not only to consider how interfirm relationships can be managed using MCS in particular, but also how these MCS are being developed, with imitation evidently playing an important role in the use of MCS in the supply chain. Even more importantly, we emphasize that a good understanding of the suitability of MCS imitation is important for the performance in the supply chain, and especially point to the role of transaction context similarity for MCS imitation to be successful.

APPENDICES

Appendix 2.A: Sample characteristics

	Average value	
Age S1 (number of years)	42.25	
	Frequency in sample	**Percentage of sample**
Size S1 (number of employees)		
< 100	38	32
100 – 500	33	28
501 – 1000	13	11
> 1000	34	29
Unknown	1	1
Industry Sector S1		
Manufacturing	51	43
Transportation	8	7
Wholesale & Retail	13	11
Finance & Real Estate	7	6
Services	21	18
Other	19	16
Industry Sector S2		
Manufacturing	73	61
Transportation	3	3
Wholesale & Retail	10	8
Finance & Real Estate	5	4
Services	16	13
Other	12	10

N = 119

Appendix 2.B: Survey measures

	Measurement Model Estimates	
	Std. Coeff.	**t-value**
MCS imitation		
Outcome control imitation [a] (α = 0.82; CR = 0.82; AVE = 0.70; HSV = 0.51)		
We established specific performance goals for the supplier that are very similar to those the buyer used with us.	0.857	10.790
We monitored the extent to which the supplier realized the performance goals in a very similar way to which the buyer monitored us.	0.818	10.135
Behavior control imitation [a] (α = 0.82; CR = 0.82; AVE = 0.69; HSV = 0.51)		
We specified procedures to be followed by the supplier that are very similar to those the buyer used with us.	0.783	9.530
We monitored the extent to which the supplier followed established procedures in a very similar way to which the buyer monitored us.	0.880	11.097
Social control imitation [a] (α = 0.72; CR = 0.72; AVE = 0.57; HSV = 0.29)		
We organized joint meetings, social events and team-building activities with the supplier just as the buyer did with us.	0.816	8.516
The exchange of information in the relationship with the supplier takes place frequently and happens face-to-face just as in the relationship with the buyer.	0.691	7.295
Uncertainty similarity [a]		
The level of uncertainty in the market is very similar in both relationships.	N.A.	
Interdependence similarity [a]		
The degree of interdependence between your firm and the partner firm is very similar in both relationships.	N.A.	
Duration similarity [a]		
The number of years in which your firm has been working together with the partner firm is very similar in both relationships.	N.A.	
Second-tier relationship performance [b]		
How would you rate the supplier's performance on fulfilling each of the following goals: Product/service quality. Delivery performance. Responsiveness to requests or changes. Sales, service and/or technical support. Overall cost performance.	N.A.	

Uncertainty [a] (α = 0.82; CR = 0.82; AVE = 0.54; HSV = 0.22)		
Availability of this product/service in the market is highly uncertain.	0.770	9.112
It is difficult to monitor technological trends in the market.	0.669	7.599
Supply of this product/service in the market is not stable.	0.827	10.009
Volume forecasts of this product/service are quite inaccurate.	0.655	7.395
Interdependence [a] (α = 0.67; CR = 0.71; AVE = 0.56; HSV = 0.16)		
We are dependent on this firm as a supplier of the product/service.	0.895	5.843
The supplier firm is dependent on us as a customer of the product/service.	0.568	4.714
Duration		
Length of relationship with supplier firm: … years.	N.A.	

[a] Items measured on a five-point Likert-type scale anchored by 1 = "strongly disagree" and 5 = "strongly agree."
[b] Items measured on a five-point Likert-type scale anchored by 1 = "very poor" and 5 = "very good."
Notes: N.A. is not applicable; all p-values < 0.01; α = Cronbach's alpha; CR = composite reliability; AVE = average variance extracted; HSV = highest shared variance.

MANUSCRIPT III
THE ROLE OF IMITATION IN TRUST FORMATION AND PARTNER SELECTION IN INTERFIRM RELATIONSHIPS

Abstract

The aim of this study is to investigate the role of imitation in trust formation and partner selection in interfirm relationships. We experimentally examine how information from other firms' experiences may shape the trust that buyer managers have in a potential supplier firm, and how this trust affects the manager's subsequent selection decisions. The results reveal different effects on two trust dimensions. The results specifically show that simply knowing other firms that trusted the supplier, without any information about the outcomes, is sufficient for the buyer manager's level of competence trust, but not of goodwill trust, in the supplier to increase. In addition, we find that even buyer managers who have the opportunity to learn from their own firm's experiences, are inclined to look at others when making trust judgments about the supplier. As expected, our results also indicate that higher levels of trust, in turn, increase the likelihood of the supplier being selected. Overall, our findings provide strong support for imitation effects, and suggest that managers may come to trust and select a certain partner, just because they see others do.

1. Introduction

Despite the potential benefits of entering into collaborative relationships, many of these turn out to be not successful, and concerns have revolved around the fairly high failure rates, both in practice and in the literature. Recent studies in this area have particularly pointed out that trust between partners (e.g., Bsteiler, 2006; Das & Teng, 2001; Coletti et al., 2005; Nicolaou et al., 2011) as well as appropriate partner selection (e.g., Emden et al., 2006; Ireland et al., 2002; Li et al., 2008; Shah & Swaminathan, 2008) are critical determinants of successful collaboration. Although it is widely recognized that a certain level of trust is indispensable for any interfirm relationship to be formed and to function, more research is required to explain how trust in potential partners is developed, and why certain partners are more likely to be selected. Especially given the increasing rapidity with which interfirm relationships are being initiated in some industries and markets, the phenomenon of early trust formation and the basis on which firms select partners are important to understand.

This study builds on the premise that trust formation and partner selection do not occur in a vacuum. Much economic behavior is nested or embedded in a social context that shapes action (Granovetter, 1985, 1992). This social context emerges from the history of own relations, as well as from the connection to other actors. Following this reasoning, it is likely that trust perceptions and selection decisions are also affected by the social context in which they are made. In fact, a number of contributions have argued that embeddedness provides opportunities for learning, through own previous experiences but also through information on previous experiences of others (Buskens & Raub, 2002). However, while several studies suggest that managers can learn from their own firm's experiences with a particular partner, our understanding remains incomplete as to how managers learn from the experiences of other firms. In particular, we contend that prior studies on trust and selection issues are limited because they fail to incorporate the role of *imitation* in the formation phase of the relationship (Barrera & Buskens, 2007). In this study, imitation relates to processes where firms, or particularly managers within these firms, draw inferences from the actions of other firms (Lieberman & Asaba, 2006). Because firms often undertake actions that can be interpreted and imitated by others, other firms' experiences with a particular partner can be an important source of information for managers that are about to engage in a new relationship and have to decide with whom to collaborate. More specifically, perceptions of a potential partner's trustworthiness may be shaped by the actions of others, and these perceptions, in turn, might affect decisions regarding own partner selection.

The aim of this study is to demonstrate that managers indeed look at others to learn about the trustworthiness of potential partners and to inform subsequent selection decisions. The focus is on a buyer manager's trust in a potential supplier firm during the initial stages of the relationship, when partners are being evaluated and eventually selected.

We develop several hypotheses regarding how managers respond to information from other firms' experiences. Overall, we propose that managers will adapt their trusting beliefs based on what others have done or are doing, but that this will vary depending on the amount of information obtained from others and on the particular type of trust. Many categorizations of trust exist, although competence trust and goodwill trust have emerged as particularly relevant to the formation of interfirm relationships (Das & Teng, 2001; Langfield-Smith, 2008). Competence trust can be defined as the belief that the partner has the ability to perform as expected, whereas goodwill trust relates to the belief that the partner will act with integrity and benevolence. Since competence trust and goodwill trust present a clear distinction, we adopt these dimensions of trust in this study. In fact, simply knowing that other firms collaborated with the supplier may give the buyer manager a sense of confidence that the supplier is capable of accomplishing given tasks in the relationship, shaping competence trust, but not regarding its intentions to do so. The buyer manager's goodwill trust in the supplier is expected to increase only when it is known that other firms had satisfactory past dealings with the supplier, which might be conceived as the supplier dealing fairly and caring about the firm's welfare in the relationship, in addition to its ability to perform. Making this distinction enables us to investigate what type of trust managers place in potential suppliers and how these types of trust are derived from various levels of information that can be obtained from others. Moreover, we predict the effect of other firms' experiences on the buyer manager's trust in the supplier to be weaker when learning from own experiences with the supplier is also possible. The reasoning behind this is that, when buyers have already done business with the supplier, information from others becomes less relevant, as they can rely primarily on their own experience. Finally, we hypothesize that trusting beliefs will have an impact on subsequent decisions, such as actual partner selection. In particular, we posit that the supplier must be trusted for it to enter the buyer manager's consideration set of potential partners. Stated differently, the level of the buyer manager's competence trust and goodwill trust in the supplier is expected to be positively associated with the likelihood of the supplier being selected (Patzelt & Shepherd, 2008; Shah & Swaminathan, 2008).

We test our hypotheses by conducting a 2 x 3 between-subjects experiment, in which participants assume the role of a buyer manager in charge of handling collaborative relationships with supplier firms, with information from own-firm experience and from other-firm experience being manipulated respectively, in order to assess whether this would influence the level of trust and, in turn, the intention to select.

The results indicate, as predicted, that buyer managers may come to trust a particular supplier by looking at other firms that have engaged in similar collaborations. The results further reveal different effects on two trust dimensions. The results in fact show that simply knowing other firms that trusted the supplier, without any information about the outcomes, is sufficient for the buyer manager's level of competence trust in the supplier to increase. This provides evidence for the presence of imitation even while excluding a reinforcement statement, namely, that it would lead to desirable outcomes. The buyer manager's level of goodwill trust in the supplier, however, will only increase when it is known that other firms had good outcomes and the supplier indeed proved to be trustworthy. Moreover, we do not find that learning from own experiences would substitute for learning from others' experiences. Rather, buyer managers tend to combine both when making trust judgments about the supplier. The results further prove that buyer managers who have higher levels of trust in the supplier's competence and goodwill are more likely to select the supplier to collaborate with.

This study contributes to the literature and practice by showing that imitation matters when forming new collaborative relationships. In this way, we provide new insights on the bases on which trust is built in the formation phase of collaborative relationships, as well as the implications for partner selection.

One reason for the lack of evidence on these issues in previous literature may be due to the fact that much research on alliances has relied upon survey or archival data. The use of these methods, however, poses some constraints for testing the hypotheses outlined in this study. For instance, the impact of various factors influencing partner attractiveness cannot be gauged for relationships that are already in existence due to the possibility of retrospective bias (Shah & Swaminathan, 2008). Our experimental approach allows us to control the research setting and isolate the effects of other firms' experiences from other potential confounding factors. Specifically by varying the information that can be obtained from others, this study provides more insights into how imitation works in the context of trust problems.

An additional advantage of our experimental approach is that it helps us to unravel the process by which information from third-parties affects partner selection. In fact, many of the arguments in prior research are based on the claim that network ties affect trust, which in turn affects partner selection. There are several studies, however, that take for granted that these effects operate through trust, but not explicitly measure trust as a mediator (Wuyts et al., 2004). In this study, we show that selection decisions are influenced by other firms' experiences, through shaping trust perceptions.

These results are especially instructive since trust and particularly mimicking trust is not easily observable in real life, because it relies on mental processes that are intrinsically difficult to observe (Barrera & Buskens, 2007). By conducting an experiment, we are able to elicit individual's trusting beliefs, and thereby offer a direct test of the role of imitation in trust formation and partner selection decisions.

The rest of the paper proceeds as follows. We first discuss the theoretical background and develop the hypotheses. We next describe the experiment and report the results. The final section concludes.

2. Theory and hypotheses

This study takes an organizational learning perspective on trust formation and partner selection in interfirm relationships. The active search for cues by managers to learn about potential partners and to inform subsequent decisions is especially critical during the formation phase of the relationship, because of the high level of uncertainty and risk that is present (Dekker & Van den Abbeele, 2010; Inkpen & Currall, 2004). This may be due to information asymmetry, with one party having private information which the other lacks, and which can be used opportunistically. This makes it difficult, for example, for the buyer manager to assess whether desirable outcomes will result from collaborating with the supplier firm (Kollock, 1994). Thus, the collaboration is conceived as a trust problem in which the buyer manager is the trustor and the supplier firm is the trustee. Managers facing such problems would be inclined to look more actively for information to guide their choices (Nooteboom, 2002). In this sense, it has also been indicated that managers, entering new relationships, initially need cues to assure them that the potential partner is trustworthy (Gulatti & Gargiulo, 1999; Nicolaou & McKnight, 2006).

In this study, we specifically investigate the role of learning from other-firm experiences and own-firm experiences as a source of partner trust in the formation phase of the relationship, as well as the impact in terms of partner selection decisions.

2.1 Trust formation and partner selection in interfirm relationships

Following prior literature, we define trust as a psychological state comprising the intention to accept vulnerability based on positive expectations about the motivations or behaviors of another (Mayer et al., 1995; Rousseau et al., 1998). Based on this notion, trust is often referred to as the perception formed by one party about another party's trustworthiness (Coletti et al., 2005; McEvily et al., 2003). In other words, trust is formed when there is sufficient confidence that the other party will be trustworthy. More specifically, the perceived likelihood that the other party will be trustworthy may be based on judgments about its competencies and/or goodwill (Nooteboom, 1996; Das & Teng, 2001). While perceptions of competence entail attributions regarding the ability of the other party, perceptions of goodwill entail attributions regarding the integrity and benevolence of the other party. Hence, our definition of trust encompasses not only concerns about a partner's ability to perform according to agreements, but also its intentions to do so, as commonly done in the literature (Malhotra & Lumineau, 2011; Patzelt & Shepherd, 2008). Positive expectations of others along these dimensions provide the foundation for trust (Elliot et al., 2012; Nicolaou et al., 2011). In the definition above, however, trust does not only refer to beliefs or expectations about trustworthiness, but also to the intention or willingness to be vulnerable to the partner. In this regard, trusting intention can be seen as the extent to which one is willing to depend on the other party in a given situation (McKnight et al., 1998; Stewart, 2003). The trusting intention of interest in our study is the intention to collaborate with the partner. Taken together, we posit that, as soon as the search for a partner begins, managers will be attuned to cues that influence the formation of its initial opinion about the potential partner's trustworthiness, upon which the decision regarding partner selection will then be based.[28] The purpose of this study is to explain where these cues may come from.

[28] It is important to note that trust between firms can exist at multiple levels. We adopt the view that trust is a psychological state and is inherently an individual-level phenomenon. This study specifically considers trust that an individual manager has in another firm. In particular, we focus on trust placed by a buyer manager, seeking to enter a new collaborative relationship, in a potential supplier firm.

In the next section, we summarize prior literature on organizational learning as a theoretical background of the study, after which we turn to the development of specific hypotheses regarding the impact on trust formation and subsequent partner selection.

2.2 An organizational learning perspective

Organizational learning is the systematic change in beliefs or behavior deriving from prior experience (Argote, 1999). There are two levels at which learning may work. Direct learning refers to learning from one's own experience. Indirect learning refers to learning from others' experience. In fact, actors adapt their choices depending on information they receive that is relevant for the decision they have to make. This information can come either from own experiences or from experiences of others who have to make similar decisions (Levitt & March, 1988; Huber, 1991). They look at their own past and repeat choices that proved to be successful, or they update their behavior after observing the choices made by others. Typically managers draw on some combination of these learning processes (Bingham & Davis, 2012).

In our context, this means that buyer managers may acquire information about a potential supplier from two key learning sources: (1) learning from their own firm's exchange experiences with the supplier and (2) learning from third-parties' exchange experiences with the supplier, such as other buyer firms.

Previous studies, however, have mainly focused on the effects of prior partner experience (e.g., Batenburg et al., 2003; Dekker, 2008; Dekker & Van den Abbeele, 2010). It has been shown that prior experience may positively influence the buyer's trust in the supplier. The reasoning is that familiarity with a particular partner generates confidence that the partner will live up to his obligations. At the same time, however, it has been emphasized that trust is not only a result of occurrences within the dyad, but is often also influenced by third-parties. In this regard, learning effects have been discussed frequently in the sociological literature. The notion that trust in a dyadic relationship may be affected by the network structure surrounding it is at the heart of embeddedness (Granovetter, 1985, 1992). Various researchers have concluded that trust increases when a relationship is embedded in ties to third-parties (e.g., Burt & Knez, 1995; Wittek, 2001; Ferrin et al., 2006; Chua et al., 2008). Nevertheless, little research has directly modeled and assessed the effects of third-parties on trust in an interfirm setting. Moreover, while it has been acknowledged that embeddedness is important for trust, analysis of the mechanisms through which this works is often lacking. It is therefore

our intention to extend previous work by considering the potential effects of third-parties' experiences, such as other buyer firms (e.g., Blumberg, 2001a,b; Gulati & Gargiulo, 1999; Rooks et al., 2006). In this study we specifically argue that interfirm partnering may be affected by a process of learning through imitation, in which managers alter their own beliefs and behavior in response to the actions of other firms.

To summarize, although the idea that learning through previous experience promotes trust is well known, most empirical evidence is related to the level of the dyad, whereas clear evidence unambiguously supporting a causal relationship between information derived from others and trust is more difficult to find (Buskens & Raub, 2002). In addition, it has been argued that prior research does not account for all network mechanisms affecting decisions in trust problems (Barrera & Buskens, 2007). In particular, we believe that specific effects of imitation on trust in interfirm relationships are largely neglected, and brings out the motivation for this study.

2.3 The role of imitation in forming trusting beliefs

In a broad sense, imitation relates to processes where individuals, and by extension organizations, draw inferences from the behavior of others (Lieberman & Asaba, 2006). In our context, imitation is considered as a mechanism to solve trust problems. By imitation we refer to situations where individuals facing a trust problem base their judgments upon observing behavior of other trustors in similar situations. If other trustors trust a certain trustee, their behavior can be perceived as a signal that trust can be placed safely. In other words, sometimes individuals come to trust somebody just because they see others do (Barrera & Buskens, 2007). Thus, concerning third-party effects, we posit that buyer managers may come to trust the supplier by looking at other firms that have done similar business with them.

One might assert that trust between others is difficult to gauge and, hence, to imitate as it is a subjective psychological state. The exchange relationship in itself, however, might be easier to observe and can serve as cues for diagnosing the lines of trust. In fact, the act of collaborating with a certain partner can be seen as the behavioral manifestation of trust, which can be observed by others and can be used to draw inferences about the potential partner's trustworthiness (McEvily et al., 2003). Therefore, in this study, imitation is defined to take place when knowing other firms that trusted the supplier, i.e., have done business with them, increases the level of trust placed by the buyer manager in the supplier.

While generally we expect such imitation effects to be present, the information gathered from the behavior of others may differ in the extent to which also the outcomes of their experiences are known. This relates to the issue as to how third-party trust is transferred to the buyer manager. One possibility is that buyer managers may learn about the third-party's level of trust in the supplier, by using the third-party's trust-related actions towards the supplier to infer that the third-party trusts the supplier, on which then their judgment about the supplier's trustworthiness is based. If the third-party is willing to transmit trust-related information, by for example directly communicating information about the supplier's trustworthiness, buyer managers may also be able to learn about the outcomes of the third-party's experiences with the supplier (Ferrin et al., 2006). Thus, in some situations buyers may only observe that other buyers have done business with the supplier, from which they could draw inferences about the supplier's trustworthiness, while in other cases they may also know whether this resulted in good outcomes and thus whether the supplier indeed proved to be trustworthy. Making this distinction allows us to investigate which type of information matters most in forming trusting beliefs, and specifically what types of trust managers place in potential suppliers based on these different levels of information obtained from other firms.

In particular, competence trust is based on the various resources and capabilities of the supplier, which are needed to perform adequately and fulfill relationship objectives (Das & Teng, 2001; Langfield-Smith, 2008). If it is known that other firms have engaged in similar collaborations with the supplier, this signals that these other firms must have believed that the supplier does possess enough resources and capabilities for accomplishing given tasks in the relationship, providing a basis for competence trust. Yet, the observation that other firms have done business with the supplier, without knowing their outcomes, does not inform about the supplier's intentions to make the relationship work, and therefore would be less likely to affect goodwill trust (Das & Teng, 2001; Langfield-Smith, 2008). If, in addition, also outcomes obtained by others are known, and specifically that these others were satisfied with the relationship with the supplier, this can be interpreted as the supplier dealing fairly and caring about the other party's welfare. Taken together, when the search for a potential partner begins, managers may be able to derive judgments about the partner's competence through third-party sources and observation, with little outcome information. However, information about the outcomes of other firms' experiences is needed to gain insights about the partner's goodwill or, in other words, to make them feel assured that the partner will cooperate in good faith. Therefore, we hypothesize that:

H1: The buyer manager's level of competence trust in the supplier will be higher when the buyer manager knows other buyer firms that have done similar business with the supplier compared to when the buyer manager does not know other buyer firms that have done similar business with the supplier.

H2: The buyer manager's level of goodwill trust in the supplier will be higher when the buyer manager knows other buyer firms that have done similar business with the supplier and that this resulted in good outcomes compared to when the buyer manager does not know other buyer firms that have done similar business with the supplier.

2.4 The moderating impact of prior experience

The effects of learning from own exchange experiences are also important to consider. The reason for this is that, as managers can learn from their own experience, their informational needs are likely to change. The interrelationship between learning from own experiences and from experiences of others, however, remains unclear (Tuschke et al., 2014). On the one hand, it could be argued that a buyer who has had no direct experience with a given supplier may be motivated to look at third-parties to obtain clues about the supplier's trustworthiness. But on the other hand, even buyers who do have direct experience with the supplier may be inclined to refer to third-parties to supplement their own information because of the difficulties of making trust judgments (Ferrin et al., 2006). In this study, we follow the first argument and posit that own prior experience may substitute for imitation of others. This is based on the idea that managers tend to copy the actions of others especially when other information is not available. That is, imitation appeals most to those with little prior information on which to base a judgment, more knowledgeable managers may rely on what they know internally (Lieberman & Asaba, 2006). Therefore, when the buyer has already done business with the supplier, they hardly need to learn from the network or to imitate other buyers, as they can rely primarily on their own firm's experience (Barrera & Buskens, 2007). In other words, information from own past collaborations with the supplier is often seen as more informative than information obtained from others about the supplier. Hence, as a way to find out when imitation matters most, we look at the moderating effect of own prior experience. In particular, we expect the effects of learning from other firms' experiences to be weaker if the buyer manager also has the opportunity to learn from its own firm's experiences. Therefore, we hypothesize that:

H3: The effect of other buyer firms' experiences with the supplier on the buyer manager's level of trust in the supplier will be weaker when the buyer has prior experiences with the supplier compared to when the buyer has no prior experiences with the supplier.

2.5 The effect of trusting beliefs on selection decisions

The perception about another's trustworthiness is an important factor in the decision when people choose others with whom to interact. People are more willing to collaborate with those whom they trust. Based on the theory of reasoned action, it has been proposed that trusting intentions will be a function of trusting beliefs (McKnight et al., 1998; Stewart, 2003). It seems logical that if one believes that the other party is trustworthy, one is likely to form a trusting intention towards that party. In our context, this means that a manager's decision to engage in a collaboration with a partner will be based on an assessment of the partner's trustworthiness (Inkpen & Currall, 2004; Nicolaou & McKnight, 2006). Managers make their partner selection decisions based on their predictions about satisfaction with their choice of collaboration partner, as informed by the partner's perceived competence and goodwill. Seen in this way, trusting beliefs may act as an evaluative mechanism regarding the extent to which buyer managers foresee positive outcomes to result from collaborating with the supplier, and is expected to positively influence the buyer manager's trusting intentions, in particular the likelihood of the supplier to be selected. More specifically, if the manager believes in the abilities and intentions of the supplier, he or she will be confident that the supplier will deliver in the future and thus will be more likely to select this supplier to collaborate with (Patzelt & Shepherd, 2008; Shah & Swaminathan, 2008). Therefore, we hypothesize that:

H4: The higher the buyer manager's level of competence trust in the supplier, the higher the likelihood of the supplier to be selected.

H5: The higher the buyer manager's level of goodwill trust in the supplier, the higher the likelihood of the supplier to be selected.

In summary, we predict that competence trust is relatively easy to form when it is known that other firms have done similar business with the supplier, whereas goodwill trust requires more information about the outcomes obtained by these others. Moreover, we predict the

effect of other firms' experiences on the buyer manager's trust in the supplier to be weaker when learning from own firm's experiences with the supplier is also possible. Further, higher levels of both competence and goodwill trust, in turn, are expected to influence the buyer manager's decisions regarding partner selection.

3. Method

We use a 2 (no own-firm experience vs. own-firm experience) x 3 (no other-firm experience vs. other-firm experience without outcome information vs. other-firm experience with outcome information) between-subjects experimental design, in which participants were asked to indicate their perceived trust in a potential partner, and subsequently to decide on partner selection.

3.1 Participants and procedures

Participants are students recruited from a postgraduate programme in management. The students are supposed to have a certain familiarity with the type of problem described in the experiment. The experiment was administered during a scheduled classroom session. All participants were volunteers and, in turn for their participation, had the chance to win movie tickets. In total, 156 students completed the experiment. The participants assumed the role of an R&D manager in a technology firm, being responsible for finding an adequate supplier firm to collaborate with on a new product development project. This specific setting is used as it introduces interesting aspects of trust formation and subsequent partner selection. The situation represents a trust problem in which participants had to evaluate the trustworthiness of a potential supplier. It was especially emphasized that the success of the collaboration would depend on their supplier selection.

The experimental procedure was as follows. After explaining the instructions, participants were asked to read the scenario (see Appendix 3.A). The basic scenario was described on the first page and all participants received the same information to this point. Besides their role description, participants were told that the new product development is of crucial strategic importance to the firm and involves a large amount of money. This is included as situational importance may induce individuals to more carefully evaluate the situation before making decisions. Furthermore, participants were informed that the outcomes of the project will only become clear after the project has been initiated, and especially will hinge upon the working relationship with the supplier. The reason for this is that actively

looking for information about the potential partner is more likely to take place in relatively uncertain and risky situations. After pointing this out, participants were instructed to the second page, presenting a more detailed description of a potential supplier with whom their firm can do business, including the experimental manipulations. Participants were randomly assigned to one of the six experimental conditions. In the next step, participants were asked to indicate their perceived trust in the supplier described to them, and subsequently the likelihood they would select this particular supplier to collaborate with. Finally, participants had to respond to two manipulation check questions, and were asked to fill in some demographic questions, as well as questions regarding their motivation to perform the experiment and their understanding of the experimental task.

3.2 Manipulations

The two independent variables manipulated in our experiment are own-firm experience and other-firm experience. First, information from own experience was manipulated by telling the participants either that their firm has never done business before with the supplier (no own-firm experience condition) or that their firm has done business with the supplier before and had good outcomes (own-firm experience condition). We include these two levels as the focus is on the difference between no prior experience and positive prior experience with the partner (see e.g., Buskens & Weesie, 2000). Second, information from others' experience is manipulated by either giving no information about other buyer firms' previous experiences with the supplier which represents the control condition (no other-firm experience condition), by indicating that they know other buyer firms that have done business with the supplier but not the outcomes (other-firm experience without outcome information condition) or by indicating that they know other buyer firms that have done business with the supplier and had good outcomes (other-firm experience with outcome information condition). We use these three levels in order to study the difference between no information, neutral information, and positive information derived from others' experiences with the partner. After all, imitation might occur without knowing the outcomes obtained by others, or could be based on information that includes the outcomes of a given collaboration (see e.g., Barrera & Buskens, 2007).

3.3 Measures

Next the dependent variables were measured. The participants were asked to answer a series of questions reflecting their trust in the supplier, derived from existing scales to measure trust (see e.g., McKnight et al., 2002; Nicolaou & McKnight, 2006). The first six items in the scale capture benevolence and integrity which reflect the individual's belief in the supplier's goodwill, whereas the last three items capture the individual's belief in the supplier's competence. Furthermore, participants were asked to make decisions on partner selection. Specifically, participants needed to indicate how likely it would be that they would select the supplier described in the experiment. This measure of supplier selection intends to reflect the individual's trusting behavior (see e.g., McKnight et al., 2002; Nicolaou & McKnight, 2006). In addition to the dependent variables, we also measured participants' disposition to trust, as this personal characteristic may influence trust in the supplier and subsequent decisions (see e.g., McKnight et al., 2002; Nicolaou & McKnight, 2006). Disposition to trust represents an individual's general tendency to trust others, and was measured by using a three-item scale. This allows us to pick up how much trust one is likely to have in another, prior to data on that particular party being available. All questions were to be answered on a seven-point Likert-type scale (see Appendix 3.B).

4. Analysis and results

We test our hypotheses by conducting the following analyses. First, analyses of covariance (ANCOVA) are used to test the main and interactive effects of other-firm experience and own-firm experience on partner trust (H1 to H3), controlling for the effects of trust disposition. Second, we use ordinary least squares (OLS) regression modelling to test the impact of partner trust on partner selection (H4 and H5). In addition, a structural equation modelling (SEM) analysis is conducted to offer an overall assessment of the entire model. Before testing the hypotheses, we performed some manipulation checks on the experimental conditions, and validated the measurement scales.

4.1 Preliminary analyses

Participants had to respond to two manipulation check questions. The first question asked participants whether their firm has done business before with the supplier: "yes" or "no". The second question asked participants whether they knew any other firms that have done similar business with the supplier: "yes" or "no". Of the 156 participants enrolled in the experimental

sessions, 38 failed one or more of the manipulation check questions. These participants are excluded from our subsequent analyses, leaving us with 118 usable observations in total, and approximately 20 per cell.[29] To further assess the effectiveness of our manipulations, participants were also asked to indicate how they would characterize their firm's satisfaction about its prior dealings with the supplier, in case their firm had done business with the supplier before. This question was answered by the participants in the own-firm experience condition, and resulted in a mean score (M = 6.00; SD = 0.53) that is significantly higher than the midpoint of the scale. In a similar vein, in case they knew other firms that have done similar business with the supplier, participants were asked to indicate how they would characterize these other firms' satisfaction about their dealings with the supplier. Most of the participants in the other-firm experience without outcome information condition correctly indicated "do not know", as this was not explicitly mentioned. Of the participants in the other-firm experience with outcome information condition, none indicated "do not know", yielding a mean score (M = 6.05; SD = 0.93) that is significantly higher than the midpoint of the scale.[30]

Of the final sample of participants, 56 % were male, the average age was 24 years, and the majority had working experience of more than 12 months. The demographic data were tested for differences across experimental conditions to determine whether randomization was successful. As desired, no significant differences were found (all $p > 0.10$). The mean scores of motivation to perform the experiment (M = 4.40; SD = 1.05) and clarity of the experimental task (M = 4.40; SD = 1.26) were significantly larger than the midpoint of the scale, indicating that the participants were well motivated and understood the task. We did not find any significant differences across the experimental conditions on these variables either (all $p > 0.10$).

[29] As a robustness check, we reran the analyses using the full sample and found that the results remain qualitatively the same, although the statistical significance of the effects of other-firm experience on competence trust becomes slightly weaker.

[30] Some of the respondents in the other-firm experience without outcome information indicated a satisfaction level ranging from 4 to 7, with the mean score (M = 5.36; SD = 0.56) significantly higher than the midpoint of the scale. Thus, an intriguing result of the experimental manipulation is that, if they are told that others have done business with the supplier, some participants infer that it must have been good, even when the outcomes are not explicitly mentioned. However, when the outcomes are mentioned, participants scored the satisfaction levels significantly higher than when the outcomes are not mentioned ($t = 2.74$; $p < 0.01$). Based on this we can conclude that the manipulations have worked.

4.2 Measurement validation

Given that we adapted the measures of trust from prior studies, we performed an exploratory factor analysis (EFA) on the set of nine questions, to assess the validity of the construct. The results reveal two distinct factors (eigenvalues larger than 1; accounting for 57.34 % of the variance). The first six items load on one factor, representing goodwill trust. The last three items load on the second factor, representing competence trust. We further evaluated the trust construct by running a confirmatory factor analysis (CFA). The model distinguishing between goodwill trust and competence trust demonstrates a good fit (χ^2/df = 1.08; GFI = 0.95; CFI = 0.99; RMSEA = 0.03). All items load significantly on their respective factors, indicating convergent validity of the measures. To assess discriminant validity, we computed the average variance extracted, and found that these are greater than the shared variance between the factors. Moreover, constrained analyses show a significant difference in chi-square values between the constrained and unconstrained model, confirming discriminant validity. The Cronbach alpha of 0.79 for competence trust and 0.78 for goodwill trust reflects high construct reliability. In testing the hypotheses, we differentiate between competence trust and goodwill trust, and derive these two variables by calculating individual scores as means of the combined scale items.[31] Table 3.1 reports the descriptive statistics for both competence trust and goodwill trust by experimental condition.

A similar measurement analysis was performed for trust disposition, as this was also based on a multi-item scale. The results indicate that all items significantly load on one factor. The Cronbach alpha equals 0.73. From this we conclude that the measure is valid and reliable.

[31] We also calculated weighted average scores based on the EFA and CFA loadings on competence trust and goodwill trust. Repeating our analyses with these weighted dependent variables leads to very similar results.

Table 3.1: Descriptive statistics

Means and standard deviations for competence trust

	Other-firm experience			
Own-firm experience	no other-firm experience	other-firm experience without outcome information	other-firm experience with outcome information	**Row total**
no own-firm experience	4.76 (0.61) n = 21	5.09 (0.67) n = 19	5.11 (0.75) n = 19	4.98 (0.68) n = 59
own-firm experience	5.33 (0.75) n = 21	5.53 (0.70) n = 19	5.68 (0.86) n = 19	5.50 (0.77) n = 59
Column total	5.05 (0.73) n = 42	5.31 (0.71) n = 38	5.39 (0.84) n = 38	5.24 (0.77) n = 118

Means and standard deviations for goodwill trust

	Other-firm experience			
Own-firm experience	no other-firm experience	other-firm experience without outcome information	other-firm experience with outcome information	**Row total**
no own-firm experience	4.60 (0.68) n = 21	4.62 (0.56) n = 19	4.63 (0.84) n = 19	4.62 (0.59) n = 59
own-firm experience	5.03 (0.43) n = 21	5.04 (0.76) n = 19	5.26 (0.62) n = 19	5.11 (0.61) n = 59
Column total	4.81 (0.61) n = 42	4.83 (0.69) n = 38	4.95 (0.79) n = 38	4.86 (0.70) n = 118

4.3 Hypotheses tests

The first set of hypotheses relates to the effects of other-firm experience and own-firm experience on the buyer manager's trust in a potential supplier firm. Table 3.2 and Table 3.3 present the hypotheses tests. The analysis consists of two separate ANCOVA models, one for each dependent variable.[32] As indicated above, we include trust disposition as covariate. We do this to control for the variation in participants' inherent propensity to trust. Consistent with our expectations, trust disposition has a significant positive influence on trust, and this appears to be the case for both trust dimensions. In what follows, we look at the effects of the experimental treatments on competence trust and goodwill trust, controlling for trust disposition.

Table 3.2: ANCOVA on competence trust

PANEL A: Adjusted means and standard errors

Own-firm experience		**Other-firm experience**	
no own-firm experience	4.99 (0.09)	no other-firm experience	5.04 (0.11)
own-firm experience	5.51 (0.09)	other-firm experience without outcome information	5.30 (0.12)
		other-firm experience with outcome information	5.41 (0.12)

PANEL B: Test of between-subjects effects

Source	**Sum of Squares**	**df**	**Mean Square**	**F**	**p-value**[a]
trust disposition	1.00	1	1.00	1.92	0.08
other-firm experience	2.92	2	1.46	2.82	0.03
own-firm experience	7.77	1	7.77	14.97	< 0.01
other-firm experience*own-firm experience	0.18	2	0.09	0.17	0.42
error	57.63	111	0.52		

PANEL C: Contrast results

	Mean Difference	**p-value**[a]
no other-firm experience vs. other-firm experience without outcome information	0.26	0.06
no other-firm experience vs. other-firm experience with outcome information	0.35	0.02
other-firm experience without outcome information vs. with outcome information	0.09	0.30

[a] The p-values are reported on a one-tailed basis, given the directional predictions of the effects.

[32] The hypotheses were also tested using multivariate analysis of covariance (MANCOVA), allowing the two dependent variables to be analyzed simultaneously. The results are consistent with those of the univariate tests for both competence and goodwill trust.

Table 3.3: ANCOVA on goodwill trust

PANEL A: Adjusted means and standard errors

Own-firm experience		**Other-firm experience**	
no own-firm experience	4.64 (0.08)	no other-firm experience	4.79 (0.10)
own-firm experience	5.09 (0.08)	other-firm experience without outcome information	4.80 (0.10)
		other-firm experience with outcome information	5.00 (0.10)

PANEL B: Test of between-subjects effects

Source	**Sum of Squares**	**df**	**Mean Square**	**F**	**p-value**[a]
trust disposition	6.91	1	6.91	18.26	< 0.01
other-firm experience	1.03	2	0.52	1.36	0.13
own-firm experience	6.09	1	6.09	16.08	< 0.01
other-firm experience*own-firm experience	0.21	2	0.11	0.28	0.38
error	42.01	111	0.38		

PANEL C: Contrast results

	Mean Difference	**p-value**[a]
no other-firm experience vs. other-firm experience without outcome information	0.01	0.48
no other-firm experience vs. other-firm experience with outcome information	0.21	0.07
other-firm experience without outcome information vs. with outcome information	0.20	0.08

[a] The p-values are reported on a one-tailed basis, given the directional predictions of the effects.

The means in Table 3.2 Panel A show that other-firm experience increases the level of competence trust (from 5.04 to 5.30 to 5.41). The results in Table 3.2 Panel B indicate that the increase is significant ($F = 2.82$, $p = 0.03$, one-tailed). The means reported in Table 3.3 Panel A show that other-firm experience increases the level of goodwill trust (from 4.79 to 4.80 to 5.00). The results in Table 3.3 Panel B, however, indicate that the increase is not significant ($F = 1.36$, $p = 0.13$, one-tailed). Hence, we find different effects on the two trust dimensions, with influences from other-firm experiences having a significant positive impact on the buyer manager's competence trust, but not on goodwill trust in the supplier.

Because we manipulated other-firm experience at three levels, we conduct more in-depth tests to inspect the differences in trust formation between experimental treatments, as postulated in H1 and H2. Contrast results in Table 3.2 Panel C indicate that, compared to the no other-firm experience condition, competence trust is significantly higher in the other-firm experience without outcome information condition (mean difference = 0.26, p = 0.06), as well as in the other-firm experience with information condition (mean difference = 0.35, p = 0.02). However, no significant difference is observed when we compare the two other-firm experience conditions (mean difference = 0.09, p = 0.30). This pattern of results is illustrated in the profile plot in Figure 3.1. As the other-firm experience condition without knowing the outcomes does result in higher competence trust than in the control condition, we can accept H1. Overall, these findings suggest that simply knowing other firms that have done business with the supplier, when nothing is mentioned about the outcomes and thus the information is not directly indicative of the supplier's trustworthiness, is sufficient for the participants' level of competence trust in the supplier to increase. Contrast results in Table 3.3 Panel C indicate that, goodwill trust does not significantly differ between the no other-firm experience condition and other-firm experience condition without outcome information condition (mean difference = 0.01, p = 0.48), but is significantly higher in the other-firm experience with outcome information condition than in the no-other firm experience condition (mean difference = 0.21, p = 0.07). Moreover, comparing the two other-firm experience conditions, it appears that goodwill trust is significantly higher in other-firm experience with outcome information condition than in the other-firm experience without outcome information condition (mean difference = 0.20, p = 0.08). This pattern of results is illustrated in the profile plot in Figure 3.2. Since the other-firm experience condition with knowing the outcomes leads to higher goodwill trust than in the control condition, this provides support for H2. We conclude that simply knowing other firms that have done business with the supplier is not enough to establish goodwill trust. The participants' goodwill trust in the supplier will only increase when it is known that other firms had good outcomes and thus the supplier indeed proved to be trustworthy.

Figure 3.1: Profile plot for competence trust

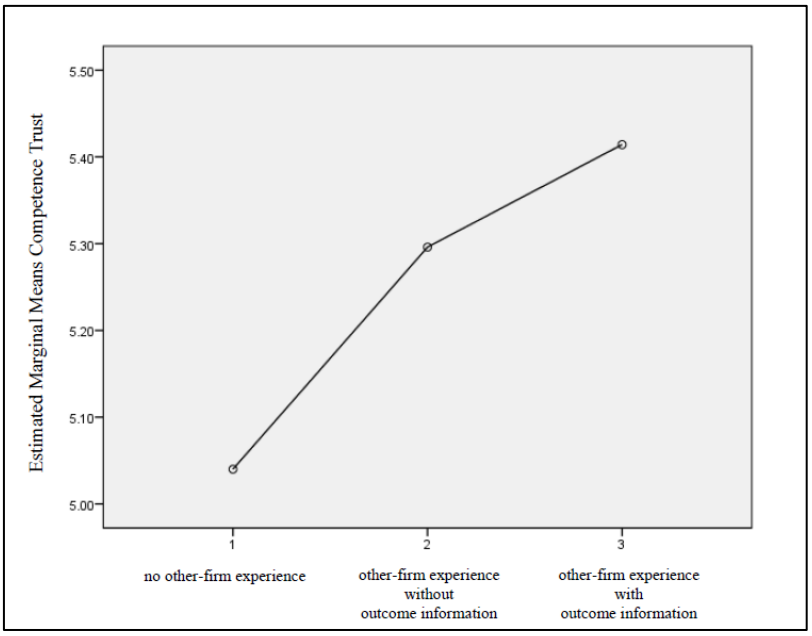
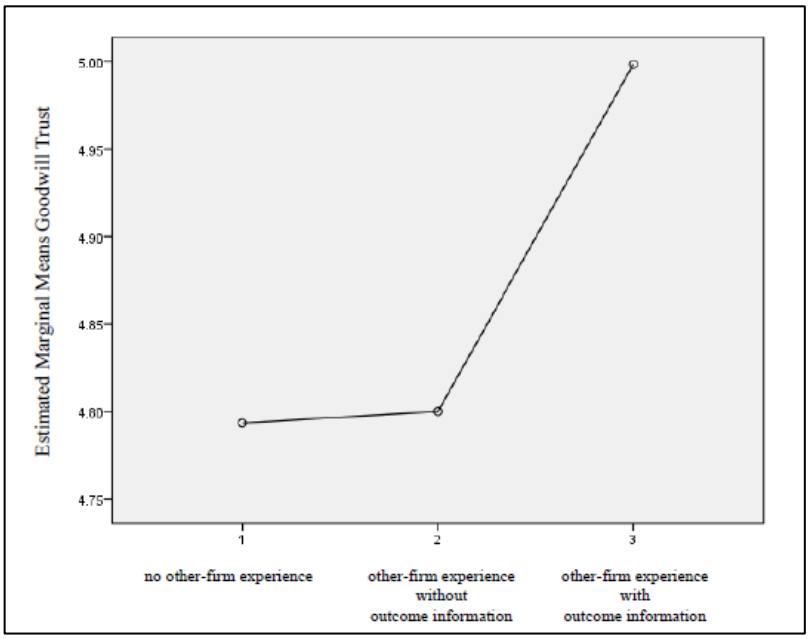


Figure 3.2: Profile plot for goodwill trust



H3 posits that the effect of other-firm experience is weaker if the buyer also has the opportunity to learn from own-firm experience. The ANCOVA results in Table 3.2 and Table 3.3 show no significant interaction effect for either competence trust or goodwill trust. Thus, no evidence is found that own-firm experience would substitute for other-firm experience, and H3 is not supported. A potential explanation is that, although the participants may be aware of prior dealings with the supplier and may have been told that their firm and the other firm had a satisficing relationship, their willingness to trust may still be tentative, and looking at others may yield supplementary information to make trust judgments about the supplier.

The final hypothesis relates to the impact trust has on subsequent decisions regarding partner selection. Specifically, H4 and H5 propose that the level of the buyer manager's competence and goodwill trust in the supplier will be positively associated with the likelihood of the supplier being selected. We test this using OLS regression modeling, with partner selection as a function of competence trust and goodwill trust. The R-squared for the model is 0.26. The results are presented in Table 3.4. In line with our expectations, the relation between trust and the likelihood to select is positive and significant, and this appears to be the case for both competence trust ($\beta = 0.26$, $p < 0.01$, one-tailed) and goodwill trust ($\beta = 0.33$, $p < 0.01$, one-tailed), lending support for H4 as well as H5. This confirms that beliefs about the other party's competence and goodwill are both critical in selecting a partner.

Table 3.4: OLS regression on partner selection

	β	**p-value**[a]
competence trust	0.26	< 0.01
goodwill trust	0.33	< 0.01

[a] The p-values are reported on a one-tailed basis, given the directional predictions of the effects.

4.4 Structural model

The previous section reports separate tests for our hypotheses, but does not provide an overall assessment of the entire model. Similar to Barton and Mercer (2005), we perform a SEM analysis to gain insights into how other-firm experience and own-firm experience affect trust, and subsequently partner selection decisions. The SEM analysis, using maximum likelihood estimation, simultaneously estimates the structural model and measurement model. The measurement model relates the measurement items to the respective constructs. The structural model contains the variables own-firm experience, other-firm experience, goodwill trust,

competence trust, and partner selection, and specifies linkages between them.[33] As control variable we include trust disposition. The fit statistics indicate that the model fits the data well (χ^2/df = 1.47; GFI = 0.89; CFI = 0.93; RMSEA = 0.06). Table 3.5 and Figure 3.3 summarize the results.

Consistent with the ANCOVA results discussed above, we observe that own-firm experience has a significant positive effect on both trust dimensions, while the path of other-firm experience is significant for competence trust ($\beta = 0.20$, $p = 0.02$, one-tailed) but not for goodwill trust ($\beta = 0.10$, $p = 0.13$, one-tailed). For the second link in our model, we find that both competence trust ($\beta = 0.33$, $p < 0.01$, one-tailed) and goodwill trust ($\beta = 0.23$, $p = 0.04$, one-tailed) are significantly and positively related to partner selection, confirming the results from the OLS regression presented above.

Table 3.5: Results of structural model

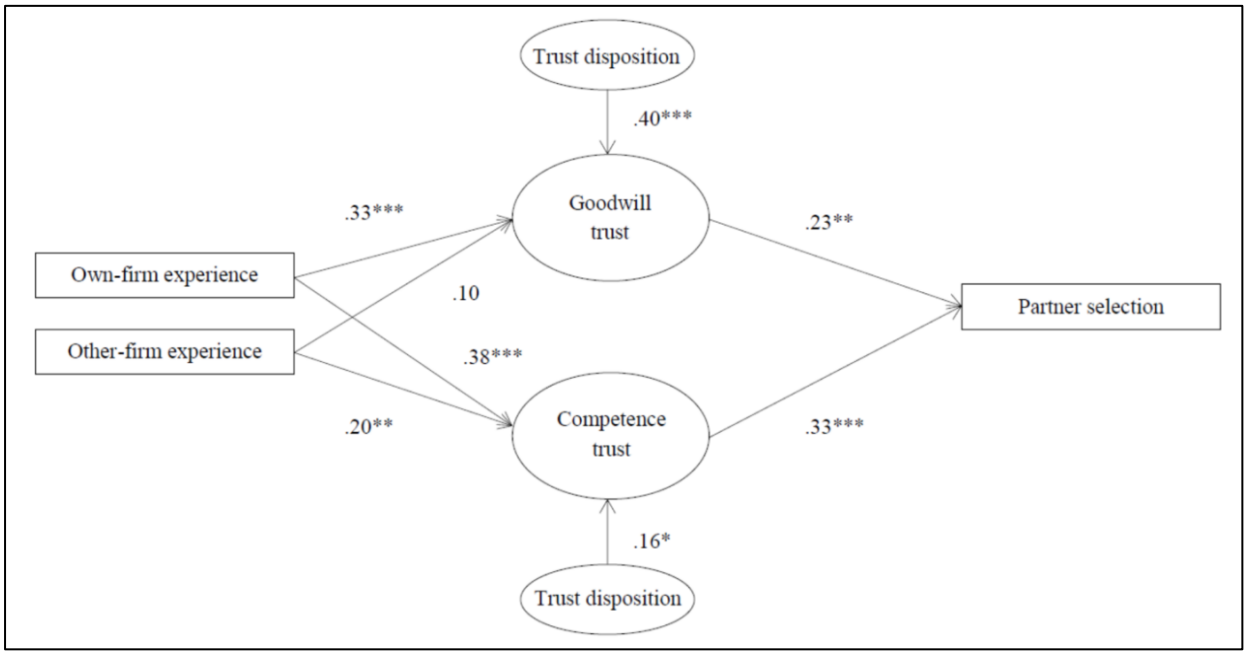
	β	**p-value**[a]
trust disposition → goodwill trust	0.40	< 0.01
trust disposition → competence trust	0.16	0.07
own-firm experience → goodwill trust	0.33	< 0.01
own-firm experience → competence trust	0.38	< 0.01
other-firm experience → goodwill trust	0.10	0.13
other-firm experience → competence trust	0.20	0.02
goodwill trust → partner selection	0.23	0.04
competence trust → partner selection	0.33	< 0.01

[a] The p-values are reported on a one-tailed basis, given the directional predictions of the effects.

The structural model further allows us to inspect whether partner trust mediates the effect of other-firm experience and own-firm experience on partner selection. We follow the steps recommended by Zhao et al. (2010) to test for mediation. To establish mediation, this test only requires the indirect effect to be significant. Bootstrap results indicate that the indirect path from own-firm experience (0.20, $p < 0.01$, one-tailed) as well as from other-firm experience (0.09, $p = 0.03$, one-tailed) to partner selection is positive and significant. This means that other-firm experience and own-firm experience indirectly influence partner selection. Given our earlier arguments, this can be interpreted in the sense that other-firm experience and own-firm experience influence partner selection *via* their effect on partner trust.

[33] The variable own-firm experience is coded 1 for no own-firm experience and 2 for own-firm experience. The variable other-firm experience is coded 1 for no other-firm experience, 2 for other-firm experience without outcome information and 3 for other-firm experience with outcome information.

Figure 3.3: Representation of structural model



*, **, *** indicate significance at the 10 percent, 5 percent, and 1 percent levels, respectively (one-tailed).

5. Conclusion

This study investigates the role of imitation in trust formation and partner selection in interfirm relationships. Specifically, we examine how other firms' dealings may shape the trust that buyer managers have in a potential supplier firm, and how this trust affects the managers' subsequent selection decisions. We find support for the effects of other-firm experiences, as participants place significantly higher levels of trust in a potential supplier when they know other firms that trusted the supplier. The effects, however, appear to be more pronounced for competence trust than for goodwill trust. In addition, we find that even participants who have the opportunity to learn from own-firm experiences are inclined to look at others when making trust judgments about the supplier. As expected, our results also indicate that higher levels of competence and goodwill trust increase the likelihood of the supplier being selected. Our structural model confirms these findings, and additionally shows that other firms' experiences influence own partner selection decisions through shaping trust perceptions.

The study contributes to the literature in several ways. We extend previous research investigating the ways in which trust is built in the formation phase of collaborative relationships, as well as the implications for partner selection. More specifically, we add to the literature by demonstrating that buyers go beyond the dyad when assessing the appeal of a

potential supplier, which corroborates the value of a broader network perspective. The alliance literature, generally concerned with the formation, governance, and performance implications of firms' alliances, has often focused on dyadic exchanges, while a network perspective may provide a more complete understanding. Although there is an emerging body of research examining network effects, this is mainly focused on reputation effects and relies on a communication argument to explain the influence of network ties on alliance formation patterns. In addition to the influence that network ties will have on what information is communicated about potential partners, this study implies that observation of other firms' patterns of ties may influence choices in forming alliances. Our findings complement prior research suggesting that a model of trust transfer or imitation may be useful in addressing the question of how firms choose alliance partners (e.g., Stewart, 2003; Wittek, 2001).

By explicitly modeling and measuring these effects, our study further contributes to the understanding of how trust forms at the earliest stage of the relationship. Although trust plays a central role in interfirm partnering, its constituent elements have seldom been directly examined. Many studies have treated trust as a unidimensional construct, without making a clear distinction between competence trust and goodwill trust (e.g., Nicolaou & McKnight, 2006; Nicolaou et al., 2011). In this study, we do not only point to the existence of competence trust and goodwill trust as two distinct dimensions, but also indicate that the two types of trust are differently influenced by other-firm experiences. Particularly noteworthy is the finding that other firms dealing with a potential partner may increase one's favorable perceptions about the partner's competence but not immediately about its goodwill. This suggests that participants interpret the act of other firms dealing with a particular supplier mostly as a signal of the supplier's ability to perform its tasks, but did not view such information as indicative of the supplier's integrity and benevolence. Only when it is also known that other firms had satisfactory past dealings with the supplier, this is conceived as the supplier acting with integrity and benevolence, in addition to its ability to perform. This difference indicates that the two dimensions capture some unique elements of trustworthiness. Each dimension contributes a unique perceptual perspective from which managers consider a potential partner. The results also show that, regarding trusting intentions, competence trust and goodwill trust have a positive influence on partner selection. This provides further support for the reasoning that managers assess both the competence and goodwill of a potential partner, and together influence the intention to engage in a collaboration. Altogether, we add to the trust literature, by developing a model that integrates

different aspects of trust that have not been linked before. Some have called for more empirical work examining the differences in antecedents and consequences of different dimensions of trust (e.g., McEvily & Zaheer, 2006; McEvily & Tortoriello, 2011). We answer this call by explaining that the processes by which competence trust and goodwill trust are built are not necessarily the same, although their effects on selection decisions are.

The results generally emphasize the importance of organizational learning as a basis for partner trust. Other than earlier research on organizational learning, we consider both the effects of direct and indirect learning. While previous studies have indicated that learning may be based on information from own prior experiences as well as from experiences of others, there is a limited understanding on how these two learning processes relate to each other (Lieberman & Asaba, 2006; Tuschke et al., 2014). By looking at the interaction between the two, this study provides evidence on whether managers emphasize one mode of learning over another, and makes an important contribution to the organizational learning literature in general. The results of our study in fact suggest that participants tend to combine both types of information. That is, in addition to consulting information from own experiences, they draw on third-parties to inform trust judgments. The role that own experience plays in combination with the experience of others stresses the prominence of learning in both a specific and broader social context (Bingham & Davis, 2012; Hagedoorn, 2006).

The study also provides important insights for practice. Our findings are particularly relevant given the potential detrimental effects of poor partner selection. We show that imitation plays an important role in forming trusting beliefs and selecting collaboration partners, which can be seen as particular type of learning by means of information accessible through the network (Galaskiewicz & Wasserman, 1989; Huber, 1991). In this regard, it is important to recognize, however, that not all network ties provide equal opportunities for learning. When managers imitate others that are considered as holding superior information, imitation can be seen as a convenient way to arrive at a better decision, especially when the firm is lacking information from own prior experiences. This does not exclude the possibility, however, that imitation can be problematic (Barrera & Buskens, 2007; Lieberman & Asaba, 2006). If managers base their decisions on the choices of others, without knowing the outcomes, there will be more room for opportunism compared to situations where outcomes can be observed as well. That is to say, managers may view the experiences of others as an indicator of a potential partner's quality, inferring that if other buyer firms are doing business

with the supplier, it must be good. This may, however, not always be true. For instance, if managers engage in imitative behavior, regardless of any information about the outcomes, it could happen that they come to trust the 'wrong' partner, which may have large consequences (Carson et al., 2003; McEvily et al., 2003). In particular, competence trust is concerned only with the ability to do appropriate things, not the intention to do so. A very competent firm may well decide to be opportunistic and, therefore, threaten cooperation. In order to lower the level of such relational risk, also goodwill trust should be established (Das & Teng, 2001; Langfield-Smith, 2008). Building on this, we suggest that simply observing that other buyer firms collaborated with the supplier may be not enough, but that it would be worthwhile for managers to actively look for information about the outcomes of the other buyer firms' experiences with the supplier before making selection decisions, as to gain more assurance that the partner will cooperate in good faith rather than behave opportunistically, and consequently to avoid mistakes in the decision-making process potentially resulting from pure imitation.

The findings of this study should be interpreted in the light of its bounded scope and also suggest several avenues for further research. Particularly, as we considered only the effect of neutral or positive information from third-parties on trust perceptions, our study could be extended by examining the effects of negative experiences as well. Moreover, in the current setting, both information obtained from own firm's and other firms' experiences are based on positive experience, and hence are complementary and reinforce each other. However, it would be interesting to understand what happens in the situation where information signals are inconsistent, for example in the case of favorable own experiences but negative experiences by others. This represents an interesting topic for further research.

In addition, the imitation of trust may also be dependent on relation strength or on how well one knows the third-parties. Managers may place considerably more value on trust-related judgments obtained from trustworthy third-parties than from third-parties that are not deemed to be trustworthy themselves. Hence, which third-parties will be mainly relied upon for imitation remains an interesting question, and we leave investigating this for further research.

Another important extension of this study would be to develop an experiment in which participants play repeated trust games. The experiment could be designed in such a way that in one condition trustors only know what happens in their own game with the trustee, whereas in another condition trustors may be able to look at the choices of other trustors with

the trustee. Such a design would allow researchers to better track the effects of different types of learning and, most importantly, to observe actual imitation at work.

Furthermore, this study examines trust formation pertaining to the partner selection stage of the relationship, but we recognize that trust further develops as one's positive expectations are confirmed by another's behavior over time. Our results suggest that the role of imitation is strong when entering new collaborative relationships. Further research could investigate whether the importance of third-parties changes over the course of the relationship.

Consistent with other studies addressing governance in interfirm settings, researchers may also wish to consider the influence on other decisions, besides actual partner selection. It would be interesting to find out, for instance, whether imitation of third-parties' trustfulness towards a particular partner may also work to reduce the effort put into the contractual management of the relationship.

As a conclusion, this study provides several new insights by examining the role of imitation in trust situations. Our findings suggest that, next to learning from own prior experiences, other firms' choices may constitute an important source of trust in the formation phase of the relationship. In this way, this study highlights the social aspect of learning in which managers observe actions by other firms and change their own beliefs and behavior as a result. Further research in this area will be useful to deepen our understanding of the determinants as well as the implications of trust in interfirm relationships.

APPENDICES

Appendix 3.A: Experimental scenario

Basic scenario

You are the R&D manager of a consumer technology firm. You often collaborate with manufacturing companies ("suppliers") to develop and produce electronic devices.

Advances in technology enhance the potential for consumer electronic devices to proliferate and be utilized well beyond what is in the market today. Your firm wants to keep up with the evolving technology and seeks to launch a new electronic device incorporating a new set of features.

Since the development and production of this new product ask for significant technical expertise, your firm intends to enter into a collaborative relationship with a supplier firm to aid in these activities. As the R&D manager, you are responsible for finding an adequate supplier firm to collaborate with on the joint project.

The project concerns the development of a new product that is of crucial strategic importance to your firm and requires a large amount of money to be invested. You realize, however, that by engaging in a relationship with a supplier to carry out the new product project, your firm is exposed to risk associated with the collaboration. In fact, the outcomes of the project will only become clear after the project has been initiated, and especially will hinge upon the working relationship with the supplier.

Therefore, you place high importance on the success of the collaboration with the supplier. This will depend, in particular, on your supplier selection process. Specifically, choosing a good supplier to collaborate with will increase the likelihood of achieving the desired outcomes.

Description of potential supplier

Company HighTech is founded in 1998 and specialized in manufacturing electronic devices. The company asserts to be dedicated to providing innovative and high quality products with competitive prices to the global market. Below, a brief summary of the company profile is given.

No own-firm experience condition:
Your firm has never done business with this supplier before.
Own-firm experience condition:
Your firm has done business with this supplier before and was satisfied.

- Company name: HighTech
- Year established: 1998
- Business type: Manufacturer
- Products/Services: Electronic Devices
- R&D staff: 11 - 20 People
- Total number of employees: 250
- Estimated annual sales: $5 Million - $10 Million

The company is now considered as a potential supplier to undertake the new product project. Specifically, your firm aims to work closely with the supplier, to help in the development and production of the new electronic device.

No other-firm experience condition:
control condition; no information displayed
Other-firm experience without outcome information condition:
Next to the above information, you notice that you know some other firms that have done similar business with this supplier.
Other-firm experience with outcome information condition:
Next to the above information, you notice that you know some other firms that have done similar business with this supplier and were satisfied.

Appendix 3.B: Scale items

Construct	Measures
Goodwill trust[a]	1. I believe that this supplier would act in my best interest. 2. I believe that if required, the supplier would do its best to help me. 3. I believe the supplier is interested in my well-being, not just its own. 4. I believe the supplier would be truthful in its dealings with me. 5. I believe the supplier is honest. 6. I believe the supplier would keep its commitments.
Competence trust[a]	1. I believe the supplier is competent and effective in undertaking this project. 2. I believe the supplier would perform its role in the joint project very well. 3. I believe the supplier is a capable and valuable member of this joint project.
Partner Selection[b]	1. If you had to choose a supplier to collaborate with, how likely would it be that you would select this supplier?
Trust Disposition[a]	1. I usually trust people until they give me a reason not to trust them. 2. I generally give people the benefit of the doubt when I first meet them. 3. My typical approach is to trust new acquaintances until they prove I should not trust them.

[a] seven-point scale: 1 = "strongly disagree"; 7 = "strongly disagree".
[b] seven-point scale: 1 = "very unlikely"; 7 = "very likely".

GENERAL CONCLUSION

This PhD dissertation sought to improve our understanding of management control in interfirm relationships by investigating the role of imitation. As a general conclusion, we summarize the main contributions to the literature as well as the implications for business practice, and finally point to some limitations together with interesting opportunities for future research.

1. Academic contributions

This dissertation makes several contributions to the literature. Although imitation frequently occurs in reality, and is pervasive in the literature of other disciplines, the role of imitation has been largely neglected in the domain of interfirm management control. Several studies in various management fields have emphasized the processes through which individuals and organizations may be influenced by others (Lieberman & Asaba, 2006; Ordanini et al., 2008). None of these, however, have empirically examined the effects of imitation with regard to interfirm management control issues. In this dissertation, we start to fill this gap in the literature via three empirical studies on the role of imitation in explaining management control in interfirm relationships, and supply chains in particular.

A notable implication of this research is the importance of placing dyadic encounters within a larger context. While previous research has often focused on dyadic exchanges, our contention is that a network perspective may provide a more complete understanding of interfirm management control (Caglio & Ditillo, 2008; Anderson & Dekker, 2014). After all, how economic actions of organizational and individual actors are influenced by their relations to others is one of most classic questions in the social sciences. The fact is that one's actions are frequently and unavoidable shaped by the actions of others. In this respect, considering firms in their broader relationship context will take us toward the network view of supply chain relationships and help us better understand the influences that managers face.

In the first and second manuscript, we particularly look at imitative behaviors in a vertical supply chain triad, and point out that MCS decisions can have consequences not only in the focal dyadic relationship, but also in adjacent relationships in the supply chain. This implies that organizations, or their managers, are not atomistic players, and points to the importance of incorporating the broader social context. More specifically, in the first

manuscript, we provide first evidence on the role of MCS imitation in supply chains, and demonstrate that suppliers often imitate the MCS used by the buyer in their interactions with their own suppliers. Given extensive prior empirical support for alternative antecedents of MCS usage, this finding is impressive and suggests that how suppliers control their own suppliers follows, to a certain degree, from imitating how the buyer controlled them. This study highlights the value of extending the traditional transaction cost logic with ideas derived from the imitation literature, as suggested by previous research (e.g., Roberts & Greenwood, 1997). In addition, in the second manuscript, we build upon this further and provide evidence on how performance may follow from the imitation of MCS throughout the supply chain but, at the same time, how mismatches between the imitated controls and the specific transaction context weaken these effects. In this way, we add to our understanding of the conditions under which it is, or it is not beneficial to imitate MCS in the supply chain, and specifically emphasize the critical role of transaction context similarity for MCS imitation to be successful. Contrary to what earlier studies have indicated (e.g., Haunschild & Miner, 1997), we show that imitation, even of successful practices, is not always valuable, but that the extent to which firms benefit from imitation is contingent upon the conditions in which they operate.

In the third manuscript, we expand existing theory by providing a broader view of how managers may draw on the social context to inform trust judgments, and subsequent selection decisions. Previous studies have mainly described trustors as decision-makers who use information from their history of interactions with a partner to draw inferences about the partner's trustworthiness. The results of our study indicate that trustors also draw on third-parties to inform their trust judgments. Our findings complement prior research suggesting that a model of trust transfer or imitation is useful in addressing the question of how managers choose collaboration partners (e.g., Stewart, 2003; Wittek, 2001). In particular, we point out that managers may come to trust and select a certain partner, just because they see others do.

2. Managerial implications

This dissertation has also important implications for management practice. As mentioned before, in today's business environment, companies are increasingly working together in close supply chain relationships. However, for practitioners to realize the existing potentials, effective management controls are needed to serve as the underlying basis. In this regard, it is

important to think not only about which MCS should be used during the relationship, but also about how to set up the relationship at the outset and, especially, with which partner. Specifically, despite the potential benefits of close cooperation between firms, high failure rates are still reported, which are often attributed to the lack of adequate MCS and poor partner selection (Ireland et al., 2002; Dekker et al., 2013). This dissertation aims to develop a better understanding of how MCS are designed and how collaboration partners are selected in interfirm relationships, by introducing the role of imitation.

Especially given that imitation is a widespread phenomenon, it is important that managers understand when imitation occurs and when it may have beneficial or harmful implications (Lieberman & Asaba, 2006; Ordanini et al., 2008). By investigating the role of imitation in the context of interfirm management control, the outcome of this research offers useful insights to managers engaging in interfirm relationships.

With regard to the first and second manuscript, we believe that managers that are aware of MCS imitation in different parts of the supply chain, should be better able to control their upstream interactions. A first important point to keep in mind is that each manager has a potential for serving as a model for other managers' actions (Manz & Sims, 1981). In fact, whether or not managers desire their MCS to be imitated and passed on, this may occur nonetheless. By recognizing the conditions under which MCS imitation is likely, as indicated in the first manuscript, managers might be able to organize themselves to provide the best chance for imitation when it is desired and the least chance for imitation when it is not. Moreover, managers must realize that they themselves might be engaging in imitation, and should consider in advance whether it is in their best interest for the MCS to spread in this manner. In particular, in the second manuscript, we show that imitation should not be a context-independent choice. The suitability of MCS imitation needs a very careful and reflective assessment. Although imitating successful MCS can positively affect performance, results indicate that the effect crucially depends on similarity in the transaction context. Therefore, managers should recognize that not every cooperation is the same and that things may go wrong when imitating practices from other firms without questioning their applicability in the specific context (Lyles et al., 1996). A better understanding of these imitation effects should help managers to maximize the usefulness of their own imitation of other firms' MCS practices within the supply chain.

With regard to the third manuscript, the results should make managers aware of the different types of influences they are facing when selecting among potential partners. Our

findings indicate that observing other firms' choices may increase a manager's trust in a potential partner. Scholars have noted, however, that trust by itself does not guarantee trustworthy behavior (Carson et al., 2003; McEvily et al., 2003). Just because one party trusts another party, it does not follow that the other party is indeed going to meet the expectations of the first party. According to this, we argue that managers must beware of the dangers involved in blindly following other firms as, without any information about their outcomes, this may lead to instances of misplaced trust and poor partner selection.

3. Limitations and suggestions for future research

This dissertation provides new insights on the impact of imitation on the decision-making process to form interfirm relationships and the management thereof. As every study, we recognize that this dissertation is not without limitations, which at the same time bring out a number of promising avenues for future research.

A first topic for future research directly follows from the specific setting we focused on. Although our ideas are centered around interfirm relationships in general, in all three manuscripts, our empirical results relate to buyer-supplier relationships. It must be noted that interfirm relationships can take many forms (e.g., Brass et al., 2004; Langfield-Smith, 2008), and the extent to which our findings are generalizable to other types of relationships remains to be studied.

Further, given our interest in studying imitative behavior, it is important to keep in mind that no empirical test on imitation can be done without a correct measurement of the construct, and an important observation is that imitation is one of the concepts that lack a shared and clear operationalization (Ordanini et al., 2008). In both the first and second manuscript, using survey data, we propose a measure for imitation of MCS in supply chains, and use several validation questions. Examining the phenomena of MCS imitation with alternative operationalizations, however, could provide additional empirical support for our findings.

Related to this, the first and second manuscript examined MCS imitation moving upstream in the supply chain. It would be interesting for future research to find out whether a similar process may also occur moving downstream. More generally, our results demonstrate the importance of looking outside the focal dyad when examining certain phenomena. Additional insight could also be gained by further expanding the unit of analysis in relationship research (Kumar et al., 2011). For example, pointing to the wider network of

relationships, how far imitation carriers may also be important to consider. While we looked at the supply chain consisting of three members, it would be of interest to see whether imitation also occurs at other levels of the supply chain, and potentially whether there is a decrease or increase in imitation at each subsequent level, which in turn may reveal different control mismatch scenarios.

Moreover, with regard to the first manuscript, we note that the explanatory variables mainly related to the first-level dyad, while limited information was collected on the conditions of the second-level dyad. Recall that we have chosen the factors investigated in this study as predictors of MCS imitation, and first-tier relationship characteristics in particular were argued to play an important role. Nevertheless, incorporating second-tier relationship characteristics in our model, for instance as informed by the traditional transaction cost framework, could provide some further clarifications on the MCS choices (e.g., Dekker & Van den Abbeele, 2010). In fact, while we highlight that effects beyond the dyadic relationship are important to consider when explaining MCS, specific characteristics of the dyad remain worthy of study because they could still directly influence the use and effectiveness of MCS. In the second manuscript, we take this into account, and examine how the impact of MCS imitation is determined by transaction context similarity. Specifically, we tested for three elements of the transaction context, and encourage future research to include other contextual variables that may shape the benefits of MCS imitation, such as other transaction characteristics or firms' cultural context (e.g., Wuyts & Geyskens, 2005).

The results of the third manuscript likewise provide interesting opportunities for future research. For instance, our findings point to competence trust and goodwill trust as two distinct dimensions, which may be formed through different mechanisms, but play both an important role in partner selection decisions. Based on the evidence presented here, we believe it is imperative for researchers to recognize that trust is a multifaceted concept and to further differentiate the dimensions of trust (e.g., Gattiker et al., 2007). This would allow for a more nuanced view on trust formation and its consequences in collaborative relationships.

In addition, as we considered only the effect of neutral or positive information from third-parties on trust perceptions, the third manuscript could be extended by examining the effects of negative experiences as well. For example, the buyer manager could be informed by other firms that they have done business with a particular supplier who did not meet his obligations, and hence were not satisfied. Such negative feedback could have a large impact on the buyer manager's trust in the supplier. Indeed, social psychology research has shown

that negative information is given heavier weight and consideration than neutral or positive information because it represents potential threats or dangers (Rozin & Royzman, 2001). Specifically, previous studies found that both positive and negative information obtained from third-parties can influence trust but that the effect of negative information appears to be much stronger (Chua et al., 2008). Our results indicate, for example, that positive information from third-parties may not always greatly differ from neutral information in influencing the buyer manager's trust in a potential supplier, but it is likely that negative information will.

Building on this further, the third manuscript did not find a significant interaction effect between information obtained form own and other firms' experiences. Instead, we found that buyers who have direct experience with the supplier are still inclined to refer to third-parties, perhaps as a way to confirm what they know from their own experience. In fact, in the current setting both types of information are based on positive experience, and hence are complementary and reinforce each other. However, it would be interesting to understand what happens in the situation where information signals are inconsistent, for example in the case of favorable own experiences but negative experiences by others. Research on social psychology suggest that past decisions affect the interpretation of new information. In particular, cognitive dissonance theory posits that individuals encounter increased cognitive dissonance when they receive information that is inconsistent with a prior choice, and in response may downplay the significance of this information (Patzelt & Shepherd, 2008). Consistent with this theory, a buyer manager whose firm had prior positive experiences with a supplier will likely experience cognitive dissonance when they know other firms that had negative experiences with this supplier, which may cause him to downplay the significance of this negative information from third-parties. This suggests an interaction effect where the decrease in trust that accompanies the negative information from third-parties is less for a buyer manager whose firm itself had positive past collaborations with the supplier. Related to this, previous research has shown that information from own experiences may substitute learning from others for some types of information but may complement learning from others for other types of information, depending on the nature of the information brought by third-parties (Tuschke et al., 2014). By addressing this issue, future research could offer additional insights on the interplay between learning from own-firm and other-firm experiences.

An additional remark is that, while the third manuscript documents imitation effects that are consistent with social network theory, there is much more to understand about the social dynamics related to this. The imitation of trust may, for example, be dependent on relation

strength or on how well one knows the third-parties. Although an actor may have access to several people who are potentially critical sources of information, the quality of the relations determines which of those resources that are within reach will be accessed, and to what extent (Moran, 2005). Along the same line, managers' beliefs or behaviors may not only be influenced by the existence of information from third-parties, but also by the weighting that is assigned to such information based on the social relevance of the information source (Ferrin et al., 2006). In our context, the social relevance of an information source is likely to be reflected by the trustworthiness of that source. Managers may place considerably more value on trust-related judgments obtained from trustworthy third-parties than from third-parties that are not deemed to be trustworthy themselves. Hence, which third-parties will be mainly relied upon for imitation remains an interesting question, and we leave investigating this for future research.

Another important extension of the third manuscript would be to develop an experiment in which participants play repeated trust games (e.g., Malhotra & Murnighan, 2002). The experiment could be designed in such a way that in one condition trustors only know what happens in their own game with the trustee, whereas in another condition trustors may be able to look at the choices of other trustors with the trustee. Then, information from own-firm experiences and other-firm experiences would be not so much predetermined, but would be created within the experiment. Such a design would allow researchers to better track the effects of different types of learning and, most importantly, to observe actual imitation at work (Barrera & Buskens, 2007).

Furthermore, the third manuscript examines trust formation pertaining to the partner selection stage of the relationship, but we recognize that trust further develops as one's positive expectations are confirmed by another's behavior over time (Elliot et al., 2012). Our results suggest that the role of imitation is strong when entering new collaborative relationships. Further research could investigate whether the importance of third-parties changes over the course of the relationship. Consistent with other studies addressing governance in interfirm settings, researchers may also wish to consider the influence on other decisions, besides actual partner selection (e.g., Rooks et al., 2006). It would be interesting to find out, for instance, whether imitation of third-parties' trustfulness towards a particular partner may also work to reduce the effort put into the contractual management of the relationship.

In summary, this dissertation represents a first step in understanding the role of imitation in interfirm management control. In addition to the questions this dissertation answers, the results suggest several new directions for future research.

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